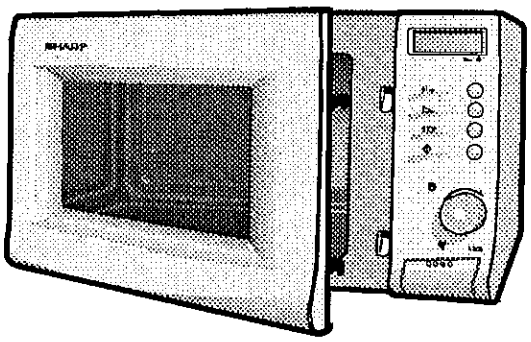
# SHARP® SERVICE MANUAL

S5658R2J28EHW



R-2J28

## MICROWAVE OVEN

## MODELS R-2J28(W)/(B)
## R-2J28(BK)
## R-2J58(W)
## R-2J68(W)/(B)

In interests of user-safety the oven should be restored to its original condition and only parts identical to those specified should be used.

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SHARP CORPORATION

## CAUTION
## MICROWAVE RADIATION

Personnel should not be exposed to the mircowave energy which may radiate from the magnetron or other microwave generating devices if it is improperly used or connected. All input and output microwave connections, waveguides, flanges and gaskets must be secured. Never operate the device without a microwave energy absorbing load attached.
Never look into an open waveguide or antenna while the device is energised.

## VARNING
## MIKROVAGSSTRALING

Personal får inte utsättas för mikrovågsenergi som kan utstrala från magnetronen eller andre mikrovågsalstrande anordningar om dessa är felanslutna eller används på fel sätt. Alla in-och utgångsanslutningar för mikrovågor, vagledare, flänsar och packningar måste vara fast anslutna. Mikrovågsgeneratorn får inte arbeta utan att absorberande belastning är ansluten. Titta aldrig in i en öppen vågledare eller antenn när mikrovågsgeneratorn är påkopplad eller laddad.

## VAROITUS
## MIKROAALTOSATEILYA

Käyttäjä ei saa joutua alttiiksi mikroaaltoenergialle, jota voi säteillä magnetronista tai muusta mikroaaltoja kehittävästä laitteesta, jos sitä käytetään väärin tai jos se kytketään väärin. Kaikkien mikroaaltoliitäntöjen sekä syöttö-että ulostulopuolella, aaltoputkien laippojen ja tiivisteiden tulee olla varmistettuja.
Mikroaaltouunia ei koskaan saa käyttää ilman kuormaa jossa mikroaaltoenergiaa kuluu. Avoimeen aaltoputkeen tai antenniin ei koskaan saa katsoa virran ollessa kytkettynä.

## ADVARSEL
## MIKRØBOLGESTRÅLING

Personell må ikke utsettes for mikrobølge-energi som kan utstråles fra magnetronen eller andre mikrobølge-generende deler dersom apparatet feilbetjenes eller blir feiltikoplet. Alle inn-og uttilkoplinger i forbindelse med mikrobølge-strålingen, bølgeledere, flenser og tetningsringer/pakninger må festes ordentlig.
Aldri bruk apparatet med mindre en mikrobålge-absorberende last er plassert i ovnsrommet. Aldri se direkte inn i en åpen bølgeleder eller antenne imens apparatet er strømførende.

## ADVARSEL
## MIKRØBOLGEBESTRALING

Man bør ikke udsætte sig for mikrobølgebestråling fra magnetronen eller andre mikrobølgefrembringende anordninger, hvilket kan ske hvis apparatet er forkert tilsluttet eller bruges forkert. Alle mikrobølgeindgange og-udgange, bølgeledere, flanger og tætningsstrimler må være forsvarligt udført.
Anvend aldrig ovnen uden en mikrobølgeabsorberende anordning. Se aldrig ind i en åben bølgeleder eller antenne, mens ovnen er i brug.

# SERVICE MANUAL

# SHARP

## MICROWAVE OVEN

## R-2J28(W)/(B)/(BK), R-2J58(W), R-2J68(W)/(B)

## GENERAL IMPORTANT INFORMATION

This Manual has been prepared to provide Sharp Corp. Service Engineers with Operation and Service Information.

It is recommended that service engineers carefully study the entire text of this manual, so they will be qualified to render satisfactory customer service.

**WARNING**

| | |
|---|---|
| **Note:** | The parts marked "*" are used at voltage more than 250V. (Parts List) |
| **Anm:** | Delar märket med "*" har en spänning överstigande 250V. |
| **Huom:** | Huolto-ohjeeseen merkitty. "tähdella" osat joissa jännite on yli 250V. |
| **Bemerk:** | Deler som er merket "asterisk" er utsatt for spenninger over 250V til jord. |
| **Bemærk:** | Dele mærket med stjerne benyttes med hojere spænding end 250 volt. |

**WARNING**

Never operate the oven until the following points are ensured.
(A) The door is tightly closed.
(B) The door and oven hinges are not defective.
(C) The door packing is not damaged.
(D) The door is not deformed or warped.
(E) There is not any other visible damage with the oven.

Servicing and repair work must be carried out only by trained Service Engineers.

All the parts marked "*" on parts list are used at voltages more than 250V.

Removal of the outer wrap gives access to potentials above 250V.

All the parts marked "Δ" on the parts list may cause undue microwave exposure, by themselves, or when they are damaged, loosened or removed.

**SHARP CORPORATION**
**OSAKA, JAPAN**

SERVICING
GENERAL INFORMATION
PRODUCT SPECIFICATION
APPEARANCE VIEW
OPERATING SEQUENCE
FUNCTION OF IMPORTANT COMPONENTS
TROUBLESHOOTING CHART
TEST PROCEDURE
TOUCH CONTROL PANEL
COMPONENT REPLACEMENT AND ADJUSTMENT PROCEDURE
MICROWAVE MEASUREMENT TEST DATA AT A GLANCE
WIRING DIAGRAM
PARTS LIST

# SERVICING

## WARNING TO SERVICE PERSONNEL

(GB) Microwave ovens contain circuitry capable of producing very high voltage and current, contact with following parts will result in electrocution.
High voltage capacitor, Power transformer, Magnetron, High voltage rectifier assembly, High voltage harness.

### REMEMBER TO CHECK 3D

1) Disconnect the supply.
2) Door opened, and wedged open.
3) Discharge high voltage capacitor.

**WARNING AGAINST THE CHARGE OF THE HIGH-VOLTAGE CAPACITOR**
The high-voltage capacitor remains charged about 60 seconds after the oven has been switched off. Wait for 60 seconds and then short-circuit the connection of the high-voltage capacitor (that is, of the connecting lead of the high-voltage rectifier) against the chassis with the use of an insulated screwdriver.

Sharp recommend that wherever possible fault-finding is carried out with the supply disconnected. It may in, some cases, be necessary to connect the supply after the outer case has been removed, in this event carry out 3D checks and then disconnect the leads to the primary of the power transformer. Ensure that these leads remain isolated from other components and the oven chassis. (Use insulation tape if necessary.) When the testing is completed carry out 3D checks and reconnect the leads to the primary of the power transformer.

### REMEMBER TO CHECK 4R

1) Reconnect all leads removed from components during testing.
2) Replace the outer case (cabinet).
3) Reconnect the supply.
4) Run the oven. Check all functions.

Microwave ovens should not be run empty. To test for the presence of microwave energy within a cavity, place a cup of cold water on the oven turntable, close the door and set the power to HIGH and set the microwave timer for two (2) minutes. When the two minutes has elapsed (timer at zero) carefully check that the water is now hot. If the water remains cold carry out 3D checks and re-examine the connections to the component being tested.

When all service work is completed, and the oven is fully assembled, the microwave power output should be checked and a microwave leakage test carried out.

(NL) Magnetronovens bevatten circuits die een zeer hoge spanning en stroom kunnen voortbrengen. Contact met de volgende onderdelen kan elektrocutie tot gevolg hebben.
Hoogspanningscondensator, hoogspanningstransformator, magnetron, hoogspanningsgelijkrichter, hoogspannings kabelboom.

### VERGEET DE VOLGENDE 3 STAPPEN NIET

1) Haal de stekker uit het stopcontact.
2) Open de deur en zorg ervoor dat hij niet dicht kan vallen.
3) Ontlaad de hoogspanningscondensator.

**PAS OP VOOR DE ELECTRISCHE LADING VAN DE HOOGSPANNINGSCONDENSATOR**
De hoogspanningscondensator blijft nog ongeveer 60 seconden lang opgeladen, nadat de oven is uitgeschakeld. Wacht 60 seconden voordat u de verbinding van de hoogspannings-condensator (m.a.w. de verbindingsdraad van de hoogspanningsgelijkrichter) met een geïsoleerde schroevedraaier kortsluit tegen het chassis.

Sharp beveelt ten sterkste aan dat, voor zover mogelijk, defecten worden opgespoord wanneer de stekker uit het stopcontact is gehaald. Soms is het nodig om de stroomtoevoer weer tot stand te brengen nadat de buitenmantel verwijderd is. Herhaal dan de bovengenoemde 3 stappen en haal de electrische draden uit de primaire zijde van de vermogenstransformator. Zorg ervoor dat deze draden geïsoleerd blijven van andere elementen en van het chassis van de oven. (Gebruik zo nodig isolatieband.) Wanneer de test is uitgevoerd, herhaalt u de bovenstaande 3 stappen en verbindt u de electrische draden weer aan de primaire zijde van de vermogenstransformator.

### VERGEET DE VOLGENDE 4 STAPPEN NIET

1) Sluit de draden weer aan diezijn losgehaald voor de test.
2) Plaats de buitenmantel weer om het toestel heen (kabinet).
3) Stop de stekker weer in het stopcontact.
4) Zet de oven aan. Controleer alle functies.

Magnetronovens mogen niet leeg aangezet worden. Om te controleren of er microgolf-energie binnen de oven wordt geproduceerd, plaatst u een mok met koud water op de draaitafel van de oven, sluit de deur, zet de oven op HIGH en stelt de klok van de magnetron in op twee (2) minuten. Wanneer de twee minuten voorbij zijn (klok staat op nul), controleert u voorzichtig of het water heet is. Indien het water nog steeds koud is, herhaalt u de allereerste drie stappen en controleer nogmaals de aansluitingen naar de geteste onderdelen.

Wanneer alle reparaties zijn uitgevoerd en de oven weer in elkaar is gezet, moet de het magnetronvermogen worden gecontroleerd en moet worden gecontroleerd of er geen microgolflekkage is.

# SERVICING

(E) Los hornos de microondas contienen circuitos eléctricos capaces de producir voltajes de alta tensión y descargas eléctricas. Para evitar el riesgo de electrocución, absténgase de tocar los siguientes componentes: condensador de alta tensión, transformador de alta tensión, magnetrón, dispositivo del rectificador de alta tensión y arnés de alta tensión.

## RECUERDE LA COMPROBACION 3D

1) Desconecte la alimentación.
2) Deje la puerta abierta y calzada.
3) Descargue el condensador de alto voltaje.

**ADVERTENCIA SOBRE LA CARGA DEL CONDENSADOR DE ALTO VOLTAJE**
El condensador de alto voltaje permanece cargado unos 60 segundos después de haber apagado el horno. Espere 60 segundos y luego ponga en cortocircuito la conexión del condensador de alto voltaje (esto es, del conductor de conexión del rectificador de alto voltaje) al chasis con un destornillador de mango aislado.

Se recomienda encarecidamente que siempre que sea posible la localización de fallos se realice con la alimentación desconectada. Puede ser que en algunos casos sea necesario conectar la alimentación después de haber retirado la carcasa exterior. En este caso, realice las comprobaciones 3D y luego desconecte los conductores del primario del transformador de alimentación. Asegúrese de que estos conductores permanezcan aislados de otros componentes y del chasis del horno. (Use cinta aislante si es necesario). Cuando termine la prueba efectúe las comprobaciones 3D y reconecte los conductores al primario del transformador de alimentación.

## RECUERDE LA COMPROBACION 4C

1) Conecte todos los componentes desconectados de los componentes durante la prueba.
2) Coloque la carcasa exterior (cabina).
3) Conecte la alimentación.
4) Compruebe todas sus funciones despues de poner en marcha el horno.

Los hornos de microondas no deben funcionar vacíos. Para comprobar la presencia de energía de microondas dentro de una cavidad, coloque una taza de agua fría en el plato giratorio del horno, cierre la puerta y ponga la potencia en HIGH (alta) y coloque el temporizador en dos (2) minutos. Cuando transcurran los dos minutos (temporizador a cero) compruebe cuidadosamente que el agua se ha calentado. Si el agua permaneciese fría, efectúe las comprobaciones 3D y vuelva a examinar las conexiones de los componentes que han sido probados.

Cuando haya terminado la intervención en el equipo y el horno haya sido ensamblado de nuevo completamente, deberá comprobar la potencia de salida de microondas y realizar una prueba de fugas de microondas.

(SV) Mikrovågsugnar innehåller kretsar som producerar mycket höga spänningar och strömmar. Kontakt med följande komponenter kan leda till dödsfall: Högspänningskondensator, transformator, magnetron, högspänningslikriktare, högspänningskablage.

## KOM IHÅG ATT KONTROLLERA 3 STEG

1) Koppla från strömkällan.
2) Öppna dörren på glänt.
3) Ladda ur högspänningskondensatorn.

**VARNING FÖR LADDNINGEN I HÖGSPÄNNINGSKONDENSATORN**
Högspänningskondensatorn är laddad i 60 sekunder efter det att ugnen stängts av. Vänta 60 sekunder och korislut sedan kondensatoms anslutning (dvs anslutningen till högspänningslikriktaren) till chassiet med hjälp av en isolerad skruvmejsel.

Sharp rekommenderar att felsökning sker med strömmen frånkopplad. Ibland kan det var nödvändigt att koppla på strömmen efter det att höljet avlägsnats, utför da 3 Steg kontrollen och koppla sedan från ledarna till transformatorns primärsida. Se till att ledarna är isolerade från andra komponenter och chassiet. (Använd isoleringsband om det behövs). När Du testat färdigt utför Du 3 Steg kontrollen och ansluter ledningarna till transformatorns primärsida igen.

## KOM IHÅG ATT KONTROLLERA 4 STEG

1) Anslut alla ledningar som använts vid testning
2) Sätt tillbaka ytterhöljet.
3) Anslut strömkällan på nytt.
4) Sätt på ugnen. Kontrollera alla funktioner.

Mikrovågsugnar får inte användas tomma. Kontrollera mikrovågsstrålningen i olika delar av ugnen genom att placera en kopp med kallt vatten på ugnens tallrik, stäng dörren, ställ in HIGH och ställ in 2 minuter på timern. När två minuter har gått (timem visar 0) kontrollerar du om vattnet är varmt. Om vattnet fortfarande är kallt utför Du 3 steg kontroller och kontrollerar anslutningarna till varje enskild komponent på nytt.

När all service är klar och ugnen ihopskruvad skall ugnens uteffekt och eventuellt mikrovågsläckage kontrolleras.

# SERVICING

I forni a microonde contengono un circuito elettrico in grado di generare tensioni e correnti estremamente elevate. L'eventuale contatto con i seguenti componenti può causare la folgorazione:
condensatore ad alta tensione; trasformatore ad alta tensione; magnetron; rettificatore alta tensione; cablaggio ad alta tensione.

## TRE OPERAZIONI IMPORTANTI PER INCOMINCIARE

1) Scollegare l'alimentazione elettrica.
2) Verificare che la porta sia bloccata in posizione aperta.
3) Scaricare il condensatore ad alta tensione.

**ATTENZIONE AL CONDENSATORE AD ALTA TENSIONE: PUO ESSERE CARICO**
Il condensatore ad alta tensione rimane carico per circa 60 secondi dopo lo spegnimento del forno. Occorre quindi spettare 60 secondi prima di cortocircuitare, utilizzando un cacciavite con impugnatura isolata, il collegamento del condensatore ad alta tensione (cioè del conduttore di collegamento del raddrizzatore ad alta tensione) sul telaio del forno.

Sharp raccomanda, nei limiti del possibile, che la ricerca dei guasti avvenga in assenza di alimentazione elettrica. In alcuni casi tuttavia, può essere necessario alimentare l'apparecchio dopo aver rimosso la scatola esterna. In questo caso eseguire i tre controlli sopra citati e quindi scollegare i connettori dal primario del trasformatore. Assicurarsi che tali connettori non vengano a contatto con altri componenti, ne con il telaio del forno (fare uso, se necessario, di nastro isolante). Al termine dell'intervento, eseguire nuovamente i tre controlli e ricollegare i conduttori al primario del trasformatore.

## QUATTRO VERIFICHE IMPORTANTI DA NON DIMENTICARE

1) Ricollegare tutti i conduttori staccati dai vari componenti durante l'intervento.
2) Rimontare la scatola esterna.
3) Ripristinare l'alimentazione elettrica.
4) Rimettere in funzione il forno. Controllare tutte le funzioni.

I forni a microonde non devono mai funzionare a vuoto. Per verificare la presenza di energia da microonde all'interno di una cavitá, mettere una tazza di acqua fredda sul piatto rotante del forno, chiudere la porta, regolare la potenza su HIGH ed impostate il temporizzatore su due (2) minuti. Trascorsi i due minuti (temporizzatore a zero), controllare accuratamente che ora l'acqua sia calda. Se l'acqua è rimasta fredda, eseguire i tre controlli iniziali e verificare nuovamente i collegamenti del componente in questione.

Dopo aver portato a termine le operazioni di manutenzione e rimontato il forno, è necessario controllare la potenza delle microonde emesse ed eseguire un test per verificare che non vi sia alcuna dispersione.

When troubleshooting the microwave oven, it is helpful to follow the Sequence of Operation in performing the checks. Many of the possible causes of trouble will require that a specific test be performed. These tests are given a procedure letter which will be found in the "Test Procedure" section.

**IMPORTANT:** If the oven becomes inoperative because of a blown fuse T160mA in the monitored latch switch - monitor switch - monitor resistor circuit, check the monitored latch switch, monitor switch and monitor resistor before replacing the fuseT160mA.

# PRODUCT SPECIFICATIONS

## SPECIFICATION

| ITEM | DESCRIPTION |
|---|---|
| Power Requirements | 230Volts<br>50 Hertz<br>Single phase, 3 wire grounded |
| Power Consumption | 1.2 kW |
| Power Output | 700W watts nominal of RF microwave energy<br>(measured by way of IEC 705)<br>Operating frequency of 2450 MHz |
| Case Dimensions | Width 449mm<br>Height 282mm including foot<br>Depth 349mm |
| Cooking Cavity Dimensions | Width 290mm<br>Height 174mm<br>Depth 313mm |
| Turntable diameter | 272mm |
| Control Complement | Jog/Touch Control System<br>Clock (1.00-12.59 or 0.00-23.59)<br>Microwave Power for Variable Cooking<br>Repetition Rate;<br>HIGH ..... Full power throughout the cooking time<br>MEDIUM HIGH ..... approx. 70% of Full Power<br>MEDIUM ..... approx. 50% of Full Power<br>MEDIUM LOW ..... approx. 30% of Full Power<br>LOW ..... approx. 10% of Full Power |
| | START/PLUS MINUTE button<br>POWER LEVEL button<br>STOP button<br>START button [R-2J28 only]<br>AUTO FUNCTION pad [R-2J58, R-2J68 only] |
| Set Weight | Approx. 13.6 kg |

# GENERAL INFORMATION

**WARNING**

**THIS APPLIANCE MUST BE EARTHED**

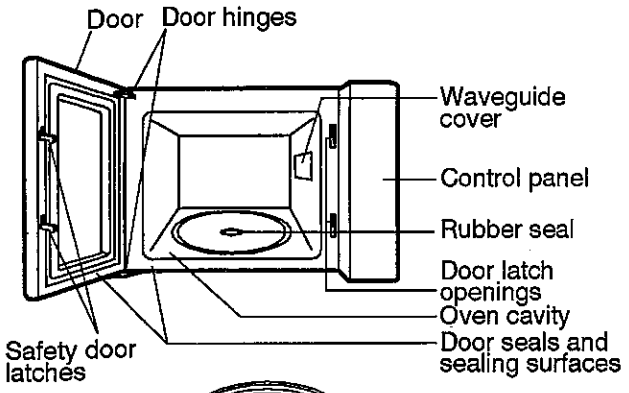
**IMPORTANT**

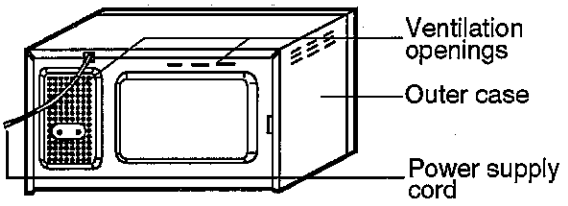
THE WIRES IN THIS MAINS LEAD ARE COLOURED IN ACCORDANCE WITH THE FOLLOWING CODE:

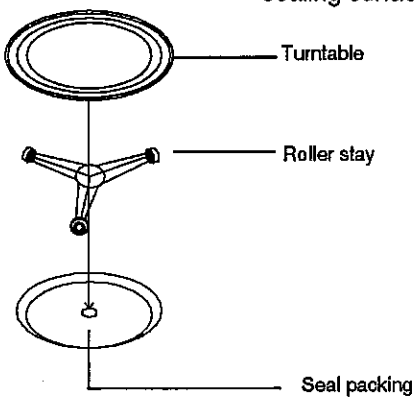
| | |
|---|---|
| GREEN-AND-YELLOW | : EARTH |
| BLUE | : NEUTRAL |
| BROWN | : LIVE |

# APPEARANCE VIEW

## OVEN

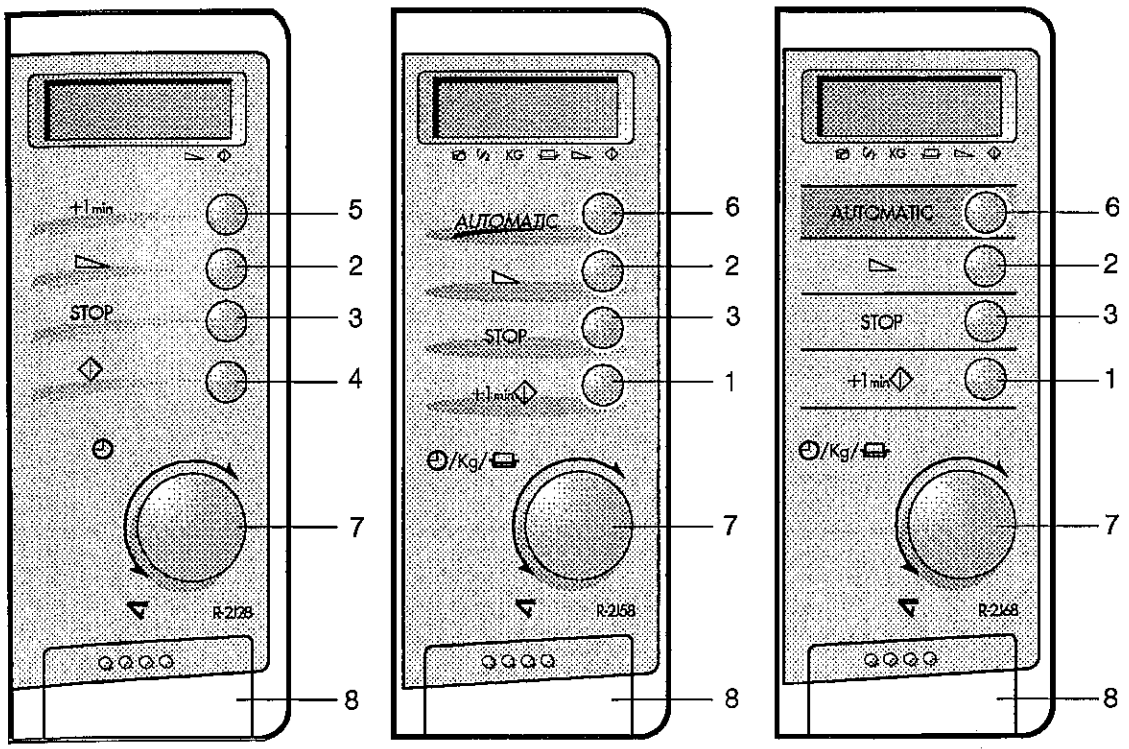



1. Place the roller stay on the floor of the oven cavity, engaging shaft into turntable motor shaft.
2. Then place the turntable on roller stay.

## CONTROL PANEL




1. Start/Plus Minute
2. Power Level
3. Stop Pad
4. Start
5. Plus Minute (R-2J28 only)
6. Auto Menu
7. Time/Weight Control
8. Door Open Button

# OPERATION SEQUENCE

## MICROWAVE OFF CONDITION

Closing the door activates the door interlock switch (monitored latch switch).

IMPORTANT
When the oven door is closed, the monitor switch contacts COM - NC must be open.
When the microwave oven is pluged in a wall outlet (220-230V 50Hz), the noise filter is energised.

**Figure 0-1 on page 29**

NOTE: When the oven door is opened, the oven lamp comes on at this time.

## MICROWAVE COOKING CONDITION

## HIGH COOKING

Enter a desired cooking time with the touching TIME pad and start the oven with touching START pad.

**Function sequence Figure 0-2 on page 29**

| CONNECTED COMPONENTS | RELAY |
|---|---|
| Oven lamp, Fan motor, Turntable motor | RY1 |
| Power transformer | RY2 |

1. The line voltage is supplied to the primary winding of the power transformer. The voltage is converted to about 3.3 volts A.C. output on the filament winding and high voltage of approximately 2000 volts A.C. on the secondary winding.
2. The filament winding voltage (3.3 volts) heats the magnetron filament and the high voltage (2000 volts) is sent to the voltage doubling circuit, where it is doubled to negative voltage of approximately 4000 volts D.C..
3. The 2450 MHz microwave energy produced in the magnetron generates a wave length of 12.24 cm. This energy is channeled through the waveguide (transport channel) into the oven cavity, where the food is placed to be cooked.
4. When the cooking time is up, a single tone is heard and the relays RY1 + RY2 go back to their home position. The circuits to the oven lamp, power transformer, fan motor and turntable motor are cut off.
5. When the door is opened during a cook cycle, the switches come to the following condition.

| | | CONDITION | |
|---|---|---|---|
| SWITCH | CONTACT | DURING COOKING | DOOR OPEN (NO COOKING) |
| Monitor switch | COM-NC | Open | Closed |
| Monitored latch switch | COM-NO | Closed | Open |

The circuits to the power transformer, fan motor and turntable motor are cut off when the monitored latch switch is opened.
The oven lamp remains on even if the oven door is opened after the cooking cycle has been interrupted, because the timer switch remains closed.

6. MONITOR SWITCH CIRCUIT
The monitor switch (SW2) is mechanically controlled by oven door, and monitors the operation of the monitored latch switch (SW1)

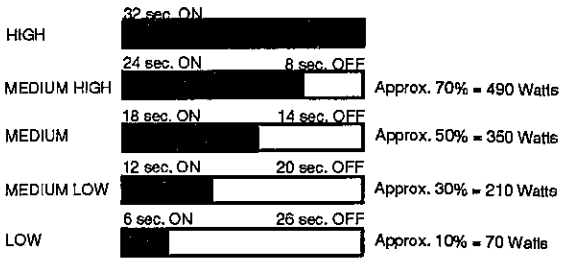
6-1 When the oven door is opened during or after the cycle of a cooking program, the monitored latch switch (SW1) must open its contacts first. After that the contacts (COM - NC) of the monitor switch (SW2) can be closed.

6-2 When the oven door is closed, the contacts (COM - NC) of the monitor switch (SW2) must be opened first. The contacts (COM - NO) of the monitored latch switch (SW1) and stop switch (SW3) are closed after.

6-3 When the oven door is opened and the contacts of the monitored latch switch (SW1) remain closed, the fuse T160mA will blow, because the monitor switch is closed and a short circuit is caused.

## HIGH, MEDIUM HIGH, MEDIUM, MEDIUM LOW, LOW COOKING

When the microwave oven is preset for variable cooking power, the line voltage is supplied to the power transformer intermittently within a 26-second time base through the vari contact. The following levels of microwave power are given.
SETTING




NOTE: The ON/OFF time ratio does not exactly correspond to the percentage of microwave power, because approx. 2 seconds are needed for heating up the magnetron filament.

# FUNCTION OF IMPORTANT COMPONENTS

## DOOR OPEN MECHANISM

The door can be opened by pushing the door open button on the control panel. When the door open button is pushed, the open lever is moved upward, operating the latch head. The latch head is moved upward, and released from the latch hook. Now, the door can be opened.

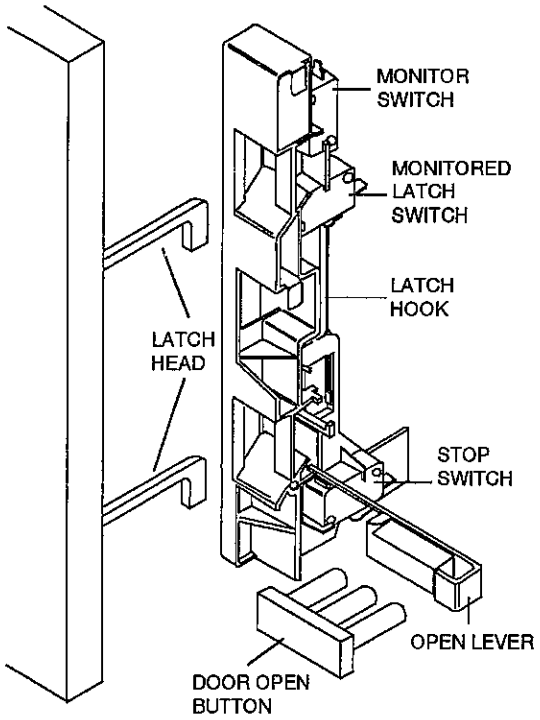



**Figure D-1. Door Open Mechanism**

## MONITORED LATCH SWITCH (SW1)

1. When the oven door is closed, the contacts (COM - NO) must be closed.
2. When the oven door is opened, the contacts (COM - NO) must be opened.

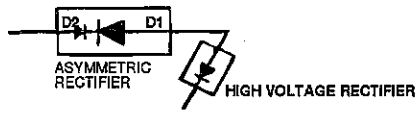
## MONITOR SWITCH (SW2)

1. When the oven door is closed, the contacts (COM - NC) must be opened.
2. When the oven door is opened, the contacts (COM - NC) must be closed.
3. If the oven door is opened and the contacts (COM - NO) of the monitored latch switch (SW1) fail to open, fuse T160mA blows simultaneously with closing the contacts (COM - NC) of the monitor switch (SW2).

CAUTION: BEFORE REPLACING A BLOWN FUSE (F) T160mA TEST THE MONITORED LATCH SWITCH (SW1), MONITOR SWITCH (SW2) AND MONITOR RESISTOR FOR PROPER OPERATION. (REFER TO CHAPTER "TEST PROCEDURE".)

## ASYMMETRIC RECTIFIER

The asymmetric rectifier is a solid state device that prevents current flow in both directions. And it prevents the temperature rise of the power transformer by blowing the fuse F6.3A when the high voltage rectifier is shorted.




The rated peak reverse voltage of D1 of the asymmetric rectifier is 6 KV. The rated peak reverse voltage of D2 of the asymmetric rectifier is 1.7 KV. D1 and D2 of the asymmetric rectifier or high voltage rectifier are shorted when the each peak reverse voltage goes beyond the each rated peak reverse voltage. (The process of blowing the fuse F6.3A.)

1. The high voltage rectifier is shorted by any causes when microwave cooking .
2. The peak reverse voltage of D2 of the rectifier goes beyond the rated peak reverse voltage 1.7 KV in the voltage doubler circuit.
3. D2 of the rectifier is shorted.
4. The large electric currents flow through the high voltage winding of the power transformer.
5. The large electric currents flow through the primary winding of the power transformer.
6. The fuse F6.3A blows by the large electric currents.
7. The power supply to the power transformer is cut off.

## FUSE F1 F6.3A

1. The fuse F6.3A also blows when asymmetric rectifier, H.V. rectifer, H.V. wire harness, H.V. capacitor, magnetron or secondary winding of power transformer is shorted.
2. If the wire harness or electrical components are short-circuited, the fuse F6.3A blows to prevent an electric shock of fire hazard.

## FUSE F2 T160mA

The fuse 160mA blows when the contacts (COM-NO) of the monitored latch switch (SW1) remain closed with the oven door open and when the monitor switch (SW2) closes.

## THERMAL CUT-OUT 145°C TC1 (MG)

The thermal cut-out protects the magnetron against overheat. If this temperature goes up higher than 145°C because the fan motor is interrupted, the ventilation openings are blocked, the thermal cut-out (TC1) will open and line voltages to the power transformer will be cut off and the operation of the magnetron will be stopped. The defective thermal cut-out (TC1) must be replaced with new one.

# FUNCTION OF IMPORTANT COMPONENTS

## THERMAL CUT-OUT 125°C TC2 (OVEN)

The thermal cut-out located on the top of the oven cavity is designed to prevent damage to the oven if the foods in the oven catch fire due to over heating produced by unproper setting of cook time or failure of control unit. Under normal operation, the oven thermal cut-out remains closed. However, when abnormally high temperatures are reached within the oven cavity, the oven thermal cut-out will open at 125°C, causing the oven to shut down. The defective thermal cut-out (TC2) must be replaced with new one.

## TURNTABLE MOTOR

The turntable motor drives the turntable roller assembly to rotate the turntable.

## FAN MOTOR

The fan motor drives a blade which draws external cool air. This cool air is directed through the air vanes surrounding the magnetron and cools the magnetron. This air flows through the oven cavity to remove steam and vapors given off from the heating foods. It is then vented through the exhaust air vents at the rear of oven cavity.

## NOISE FILTER

The noise filter prevents the radio frequency interference that might flow back in the power circuit.

# TROUBLESHOOTING CHART

○ POSSIBLE CAUSE AND DEFECTIVE PARTS

Δ INDIRECT CAUSE AND DEFECTIVE PARTS

| CONDITION | PROBLEM | A MAGNETRON | B POWER TRANSFORMER | C HV. RECTIFIER ASSEMBLY | D HV. CAPACITOR | E MONITORED LATCH SWITCH | E MONITOR SWITCH | F THERMAL CUTOUT 125C/145C | G FUSE F6.3A | H NOISE FILTER | I FUSE T160MA | J FAN MOTOR | J TURNTABLE MOTOR | K JOG TOUCH CONTROL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OFF CONDITION | Home fuse blows when power cord is plugged into wall outlet. | | | | | | | | | | | | | |
| | Fuse F6.3A blows when power cord is plugged into wall outlet. | | | | | | | | | ○ | | | | ○ |
| | Oven does not operate at all. | | | | | | | ○ | ○ | ○ | ○ | | | ○ |
| | Control panel is not operated but when door closed, the oven starts operation. | | | | | | | | | | | | | |
| | Oven lamp does not light when door is opened. | | | | | ○ | | | | ○ | | | | ○ |
| COOKING CONDITION | Oven does not start when control panel is programmed, door closed. | | | | | | | | | | | | | ○ |
| | Oven lamp does not light. | | | | | ○ | | | | ○ | | | | |
| | Fan motor does not operate. | | | | | | | | | | | ○ | ○ | |
| | Turntable motor assembly does not operate. | | | | | | | | | | | | ○ | |
| | Oven or electrical parts do not stop when time on display is finished counting. | | | | | | | | | | | | | ○ |
| | Oven seems to be operating but little or no heat is produced in oven load. (Microwave power level is set at "HIGH") | ○ | ○ | ○ | ○ | ○ | | | | | | | | ○ |
| | Oven does not operate properly during the variable cooking condition except "HIGH" cooking condition. | | | | | | | | | | | | | ○ |
| | Oven goes into cook cycle but shuts down before end of cooking cycle. | Δ | Δ | Δ | Δ | Δ | Δ | ○ | Δ | Δ | | | | Δ |
| | Oven stops as soon as the oven is started. | Δ | Δ | ○ | Δ | Δ | Δ | | ○ | Δ | | | | Δ |

# TROUBLESHOOTING CHART

| M | M | N | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T/C RELAY 1 | T/C RELAY 2 | FOIL PATTERN | POWER SUPPLY CORD | OVEN LAMP AND SOCKET | SHORTED WIRE HARNESS | OPENED WIRE HARNESS | MISADJUSTMENT SWITCH | NO POWER AT WALL OUTLET | STOP SWITCH | | | | | | | | | | | |
| | | | ○ | | | | | | | | | | | | | | | | | |
| | | | | | ○ | | ○ | | | | | | | | | | | | | |
| | | ○ | ○ | | | ○ | | ○ | | | | | | | | | | | | |
| ○ | | | | | | | | | | | | | | | | | | | | |
| | | | | ○ | | ○ | ○ | | ○ | | | | | | | | | | | |
| ○ | | | | | | ○ | ○ | | ○ | | | | | | | | | | | |
| | ○ | | | ○ | | ○ | ○ | | | | | | | | | | | | | |
| | ○ | | | | | ○ | | | | | | | | | | | | | | |
| | ○ | | | | | ○ | | | | | | | | | | | | | | |
| ○ | ○ | | ○ | | | | | | ○ | | | | | | | | | | | |
| ○ | | | | | | ○ | ○ | | | | | | | | | | | | | |
| ○ | | | | | | | | | | | | | | | | | | | | |
| Δ | Δ | | Δ | | | Δ | Δ | Δ | | Δ | | | | | | | | | | |
| Δ | Δ | | | | ○ | Δ | ○ | Δ | | ○ | | | | | | | | | | |

# TEST PROCEDURES

| PROCEDURE LETTER | COMPONENT TEST |
|---|---|
| A | MAGNETRON TEST |

NEVER TOUCH ANY PART IN THE CIRCUIT WITH YOUR HAND OR AN INSULATED TOOL WHILE THE OVEN IS IN OPERATION.

CARRY OUT 3D CHECK

Isolate the magnetron from high voltage circuit by removing all leads connected to the filament terminal.

To test for an open circuit filament use an ohmmeter to make a continuity test between the magnetron filament terminals, the meter should show a reading of less than 1 ohm.

To test for a short circuit filament to anode condition, connect ohmmeter between one of the filament terminals and the case of the magnetron (ground). This test should be indicated an infinite resistance. If a low or zero resistance reading is obtained then the magnetron should be replaced.

## MICROWAVE OUTPUT POWER (IEC-705-1988)

The following test procedure should be carried out with the microwave oven in a fully assembled condition (outer case fitted). Microwave output power from the magnetron can be measured by way of IEC 705, i.e. it can be measured by using water load how much it can be absorbed by the water load. To measure the microwave output power in the microwave oven, the relation of calorie and watt is used. When P(W) heating works for t(second), approximately P x t/4.187 calorie is generated. On the other hand, if the temperature of the water with V(ml) rises ΔT (°C) during this microwave heating period, the calorie of the water is V x ΔT.

The formula is as follows;

$P \times t / 4.187 = V \times \Delta T$ $P (W) = 4.187 \times V \times \Delta T / t$

Our condition for water load is as follows:

Room temperature.....around 20°C Power supply Voltage.....Rated voltage
Water load.....1000 g Initial temperature.....10 ± 2°C Heating time.....62 sec.
$P = 70 \times \Delta T$

Measuring condition:

1. Container
   The water container must be a cylindrical borosilicate glass vessel having a maximum material thickness of 3 mm and an outside diameter of approximately 190 mm.
2. Temperature of the oven and vessel
   The oven and the empty vessel are at ambient temperature prior to the start of the test.
3. Temperature of the water
   The initial temperature of the water is (10 ± 2)°C.
4. Select the initial and final water temperature so that the maximum difference between the final water temperature and the ambient temperature is 5K.
5. Select stirring devices and measuring instruments in order to minimize addition or removal of heat.
6. The graduation of the thermometer must be scaled by 0.1°C at minimum and an accurate thermometer.
7. The water load must be (1000 ± 5) g.
8. "t" is measured while the microwave generator is operating at full power. Magnetron filament heat-up time is not included.

NOTE: The operation time of the microwave oven is "t + 2" sec. 2 sec. is magnetron filament heat-up time.

Measuring method:

1. Measure the initial temperature of the water before the water is added to the vessel.
   (Example: The initial temperature T1 = 11°C)
2. Add the 1 litre water to the vessel.
3. Place the load on the centre of the shelf.
4. Operate the microwave oven at HIGH for the temperature of the water rises by a value Δ T of (10 ± 2) K.
5. Stir the water to equalize temperature throughout the vessel.

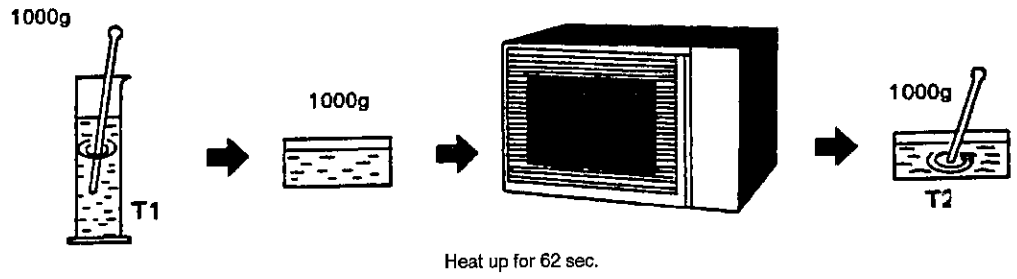
| PROCEDURE LETTER | COMPONENT TEST |
|---|---|

6. Measure the final water temperature. (Example: The final temperature T2 = 21°C)
7. Calculate the microwave power output P in watts from above formula.

| | |
|---|---|
| Initial temperature | T1 = 11°C |
| Temperature after (60 + 2) = 62 sec. | T2 = 21°C |
| Temperature difference Cold-Warm | ΔT1 = 10°C |
| Measured output power<br>The equation is "P = 70 x ΔT" | P = 70 x 10°C = 700Watts |

**JUDGEMENT: The measured output power should be at least ± 15 % of the rated output power.**

CAUTION: 1°C CORRESPONDS TO 70 WATTS. REPEAT MEASUREMENT IF THE POWER IS INSUFFICIENT.




## B POWER TRANSFORMER TEST

**WARNING: High voltages and large currents are present at the secondary winding and filament winding of the power transformer. It is very dangerous to work near this part when the oven is on. NEVER make any voltage measurements of the high-voltage circuits, including the magnetron filament.**

CARRY OUT 3D CHECKS

Disconnect the leads to the primary winding of the power transformer. Disconnect the filament and secondary winding connections from the rest of the HV circuitry. Using an ohmmeter, set on a low range, it is possible to check the continuity of all three windings. The following readings should be obtained:-

a. Primary winding ..... 2.3 ohms approximately
b. Secondary winding ..... 140 ohms approximately
c. Filament winding ..... less than 1 ohm

If the reading obtained are not as stated above, then the power transformer is probably faulty and should be replaced.

CARRY OUT 4R CHECKS

## C HIGH VOLTAGE RECTIFIER ASSEMBLY TEST

CARRY OUT 3D CHECKS.

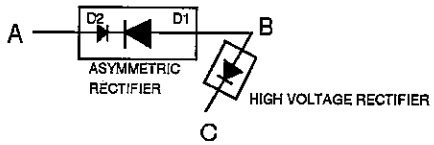
Isolate the high voltage rectifier assembly from the HV circuit. The high voltage rectifier can be tested using an ohmmeter set to its highest range. Connect the ohmmeter across the terminal B + C of the high voltage rectifier and note the reading obtained. Reverse the meter leads and note this second reading. The normal resistance is infinite in one direction and more than 100 kΩ in the other direction.

CARRY OUT 4R CHECKS

# TEST PROCEDURES

| PROCEDURE LETTER | COMPONENT TEST |
|---|---|

ASYMMETRIC RECTIFIER TEST




CARRY OUT 3D CHECKS.

Isolate the high voltage rectifier assembly from the HV circuit. The asymmetric rectifier can be tested using an ohmmeter set to its highest range. Connect the ohmmeter across the terminals A + B of the asymmetric rectifier and note the reading obtained. Reverse the meter leads and note this second reading. If an open circuit is indicated in both directions then the asymmetric rectifier is good. If an asymmetric rectifier is shorted in either direction, then the asymmetric rectifier is probably faulty and must be replaced with the high voltage rectifier. When the asymmetric rectifier is defective, check whether magnetron, high voltage rectifier, high voltage wire or filament winding of the power transformer is shorted.

CARRY OUT 4R CHECKS

NOTE: FOR MEASUREMENT OF THE RESISTANCE OF THE RECTIFIER, THE BATTERIES OF THE MEASURING INSTRUMENT MUST HAVE A VOLTAGE AT LEAST 6 VOLTS, BECAUSE OTHERWISE AN INFINITE RESISTANCE MIGHT BE SHOWN IN BOTH DIRECTIONS.

## D HIGH VOLTAGE CAPACITOR TEST

CARRY OUT 3D CHECKS

A. Isolate the high voltage capacitor from the circuit.
B. Continuity check must be carried out with measuring instrument which is set to the highest resistance range.
C. A normal capacitor shows continuity for a short time (kick) and then a resistance of about 10 MΩ after it has been charged.
D. A short-circuited capacitor shows continuity all the time.
E. An open capacitor constantly shows a resistance about 10 MΩ because of its internal 10 MΩ resistance.
F. When the internal wire is opened in the high voltage capacitor, the capacitor shows an infinite resistance.
G. The resistance across all the terminals and the chassis must be infinite when the capacitor is normal.

If incorrect reading are obtained, the high voltage capacitor must be replaced.

CARRY OUT 4R CHECKS

## E SWITCH TEST

CARRY OUT 3D CHECKS

Isolate the switch to be tested and using an ohmmeter check between the terminals as described in the following table.

Table: Terminal Connection of Switch

| Plunger Operation | COM to NO | COM to NC |
|---|---|---|
| Released | Open circuit | Short circuit |
| Depressed | Short circuit | Open Circuit |

COM; Common terminal
NO; Normally open terminal
NC; Normally close terminal

If incorrect readings are obtained, make the necessary switch adjustment or replace the switch.

CARRY OUT 4R CHECKS.

# TEST PROCEDURES

**PROCEDURE LETTER** | **COMPONENT TEST**

## F THERMAL CUT OUT TEST

CARRY OUT 3D CHECKS

Disconnect the leads from the terminals of the thermal cut-out. Then using an ohmmeter, make a continuity test across the two terminals as described in the below.

CARRY OUT 4R CHECKS

Temperature of "ON" condition (closed circuit) ..... This is not resetable type
Temperature of "OFF" condition (open circuit) ..... Above 125°C/145°C
Indication of ohmmeter (When room temperature is approx. 20°C.) ..... Closed circuit

If incorrect readings are obtained replace the thermal cut-out.

An open circuit thermal cut-out (MG) indicates that the magnetron has overheated, this may be due to restricted ventilation, cooling fan failure or a fault condition within the magnetron or HV circuit.

An open circuit thermal cut-out (OVEN) indicates that the foods in the oven may catch fire, this may be due to over heating produced by unproper setting of the cooking timer or failure of the control panel.

## G BLOWN FUSE F6.3A

CARRY OUT 3D CHECKS

1. If the fuse F6.3A is blown, there could be shorts or grounds in electrical parts or wire harness. Check them and replace the defective parts or repair the wire harness.

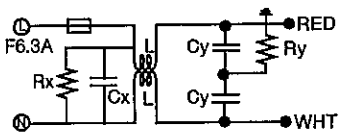
2. If the F6.3A is blown, there could be a short in the asymmetric rectifier or there could be a ground in wire harness. A short in the asymmetric rectifier may have occured due to short or ground in H.V. rectifier, magnetron, power transformer or H.V. wire. Check them and replace the defective parts or repair the wire harness.

**CAUTION: Only replace special fuse F6.3A with the correct value replacement.**

## H NOISE FILTER TEST

CARRY OUT 3D CHECKS

Disconnect the leads from the terminals of the noise filter.
Using an ohmmeter, check between the terminals as described in the following table.




| Rx ±5% | L(min) | Cx ± 20% | Cy ± 20% | Ry ±5% |
|---|---|---|---|---|
| 680kΩ | 1.0mH | 0.22μF | 0.0033μF | 10MΩ |

| MEASURING POINTS | INDICATION OF OHMMETER |
|---|---|
| Between N and L | Open circuit |
| Between terminal N and WHITE | Short circuit |
| Between terminal L and RED | Short circuit |

. ssp If correct readings are obtained, replace the noise filter unit.

CARRY OUT 4R CHECKS

# TEST PROCEDURES

| PROCEDURE LETTER | COMPONENT TEST |
|---|---|

## I BLOWN FUSE T160mA

If the fuse T160mA is blown when the door is opened, check the monitored latch switch, monitor switch and monitor resistor.
If the fuse T160mA is blown by incorrect door switching replace the defective switch(s) and the fuse T160mA.

CARRY OUT 4R CHECKS

**CAUTION: Only replace special fuse T160mA with the correct value replacement.**

## J MOTOR WINDING TEST

CARRY OUT 3D CHECKS

Disconnect the leads from the motor. Using an ohmmeter, check the resistance between the two terminals as described in the table below.

TABLE RESISTANCE OF MOTOR

| Motors | Resistance |
|---|---|
| Fan motor | Approximately 360Ω |
| Turntable motor | Approximately 12.0kΩ |

If incorrect readings are obtained, replace the motor. (Also refer to test procedure K)

CARRY OUT 4R CHECKS

## MONITOR RESISTOR TEST

CARRY OUT 3D CHECKS

Desolder the leads from the monitor resistor from the control panel using an ohmmeter. Check between the leads of the monitor resistor as described in the following table.

TABLE RESISTANCE

| Resistor | Resistance |
|---|---|
| Monitor resistor | Approx. 150Ω |

If incorrect readings are obtained, replace the monitor resistor.

CARRY OUT 3D CHECKS

# TEST PROCEDURES

| PROCEDURE LETTER | COMPONENT TEST |
|---|---|
| K | TOUCH CONTROL PANEL ASSEMBLY TEST |

**CAUTION** : Do not touch the electrical parts and the printed wiring board to prevent an electric shock. Because the control unit is " TRANSLESS CIRCUIT " and all electrical parts are used at A.C. line voltage.

The touch control panel consists of circuits including semiconductors such as LSI, ICs, etc. Therefore, unlike conventional microwave ovens, proper maintenance can not be performed with only a voltmeter and ohmmeter.
In this service manual, the touch control panel assembly is in one unit and troubleshooting by unit replacement is described according to the symptoms indicated.
Control Panel
The following symptoms indicate a defective control unit.

1. Tact Switch.
   The following symptoms indicate a defective tact switch. Replace the tact switch.
   a) When touching a tact switch, a certain tact switch produces no signal at all.
   b) When touching a tact switch, sometimes a tact switch produces no signal.
2. In connection with tact switches.
   a) When touching a tact switch, a certain group of tact switch do not produce a signal.
   b) When touching a tact switch, no tact switch produce a signal.
3. Display problems.
   a) At a certain digit, all or some segments do not light up.
   b) At a certain digit, brightness is low.
   c) Only one indicator does not light up.
   d) The corresponding segments of all digits do not light up; or they continue to light up.
   e) Wrong figure appears.
   f) A certain group of indicators do not light up.
   g) The figure of all digits flicker.
   h) When touching a tact switch, the control unit does not respond.
4. Other possible problems caused by defective control unit.
   a) Buzzer does not sound or continues to sound.
   b) Cooking is not possible.
5. Tact switch test
   a) Disconnect the oven from the power supply.
   b) Discharge the high voltage capacitor.
   c) Remove the control unit from the control panel.
   d) By using an ohmmeter, check the tact switch operation.
   e) When the tact switch is not depressed, an ohmmeter should indicate an open circuit. When the tact switch is depressed, an ohmmeter should indicate a short circuit. If improper operation is indicated, the tact switch is probably defective and should be checked.

# TEST PROCEDURES

**PROCEDURE LETTER** **COMPONENT TEST**

## M RELAY TEST

Remove the outer case and check voltage between Pin No 3 of the 3 pin connector (A) and common terminal of the relay (RY2) on the control unit with an A.C. voltmeter.
The meter should indicate reted voltage, if not check oven circuit.

RY1 and RY2 Relay Test
These relays are operated by D.C. voltage
Check voltage at the relay coil with a D.C. voltmeter during the microwave cooking operation.
DC. voltage indicated ..... Defective relay.
DC. voltage not indicated ..... Check diode which is connected to the relay coil. If diode is good, control unit is defective.

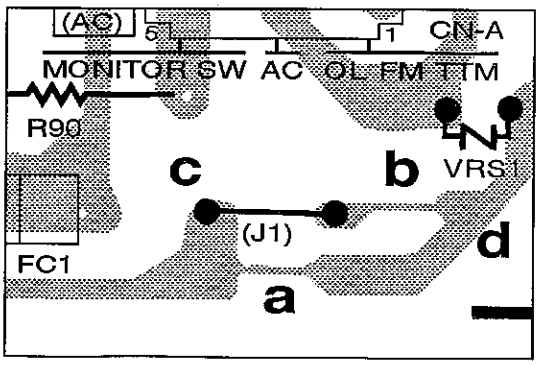
| RELAY SYMBOL | OPERATIONAL VOLTAGE | CONNECTED COMPONENTS |
|---|---|---|
| RY1 | Approx. 21.0V D.C. | Oven lamp / Turntable motor / Cooling fan motor |
| RY2 | Approx. 19.1V D.C. | Power transformer |

## N PROCEDURES TO BE TAKEN WHEN THE FOIL PATTERN ON THE PRINTED WIRING BOARD (PWB) IS OPEN.

To protect the electronic circuits, this model is provided with a fine foil pattern added to the input circuit on the PWB, this foil pattern acts as a fuse. If the foil pattern is open, follow the troubleshooting guide given below for repair.
Problem: POWER ON, indicator does not light up.

| STEPS | OCCURANCE | CAUSE OR CORRECTION |
|---|---|---|
| 1 | The rated voltage is not applied between Pin No. 3 of the 3 pin connector (A) and the common terminal of the relay RY2. | Check supply voltage and oven power cord. |
| 2 | The fuse (F1) is blown. | Exchange the fuse (F1). |
| 3 | Only pattern at "a" is broken. | *Insert jumper wire J1 and solder. |
| 4 | Pattern at "a" and "b" are broken. | *Insert the coil RCILF2003YAZZ between "c" and "d". |

NOTE: *At the time of making these repairs, make a visual inspection of the varistor. Check for burned damage. If any abnormal condition is detected, replace the defective parts.



# TOUCH CONTROL PANEL ASSEMBLY

## OUTLINE OF TOUCH CONTROL PANEL

The touch control section consists of the following circuits as shown in the touch control panel circuit.

The principal functions of these circuits and their related signals are explained below.

**Tact Switch**
Signals generated in the LSI are sent to the tact switches through R60, R61,R62 and R63.
When a tact switch is touched, a signal is completed through the tact switch and passed back to the LSI through R81 to perform the function that was requested.

**Control Unit**
Control unit consists of LSI, ACL circuit, indicator circuit, power source circuit, relay circuit, buzzer circuit, synchronizing signal circuit. back light circuit and fuse circuit.

**1) ACL**
This circuit generates a signal which resets the LSI to the initial state when power is supplied.

**2) Indicator Circuit**
This circuit consists of 4-digits, 12-segments and 3-common electrodes using a Liquid Crystal Display.

**3) Power Source Circuit**
This circuit generates voltage necessary in the control unit from the AC line voltage. In addition, the synchronizing signal is available in order to compose a basic standard time in the clock circuit.

| Symbol | Voltage | Application |
|---|---|---|
| VC | +5V | LSI(IC1) |

**4) Relay Circuit**
To drive the magnetron, fan motor, turntable motor and light the oven lamp.

**5) Buzzer Circuit**
The buzzer is responsive to signals from the LSI to emit audible sounds (key touch sound and completion sound).

**6) Synchronizing Signal Circuit**
The power source synchronizing signal is available in order to compose a basic standard time in the clock circuit. It accompanies a very small error because it works on commercial frequency.

**7) Door Sensing Switch**
A switch to "tell" the LSI if the door is open or closed.

**8) Encoder**
The encoder converts the signal generated by LSI into the pulse signal, and the pulse signal is returned to the LSI.

**9) Back Light Circuit**
A circuit to drive the back light (Light emitting diodes LED1-LED4).

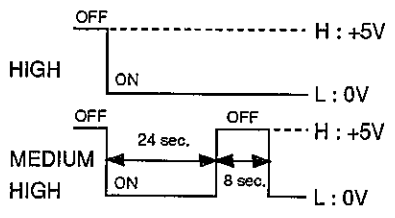
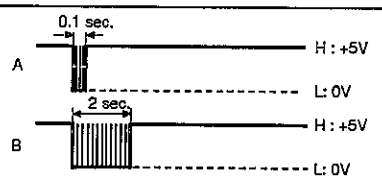
**10) Fuse Circuit**
A circuit to protect the electronic circuits. The fuse F1 works as a monitor fuse with the monitor switch.

# TOUCH CONTROL PANEL ASSEMBLY

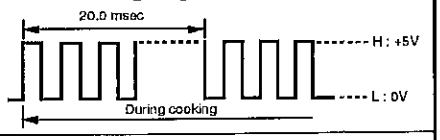
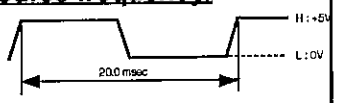
## DESCRIPTION OF LSI

### LSI(IZA710DR)

The I/O signal of the LSI(IZA710DR) are detailed in the following table.

| Pin No. | Signal | I/O | Description |
|---|---|---|---|
| 1<br>\|<br>12 | SEG 0<br>\|<br>SEG11 | OUT | **Segment data signal.**<br>Connected to LCD.<br>The relation between signals are as follows:<br>LSI signal (Pin No.) LCD (Pin No.) LSI signal (Pin No.) LCD (Pin No.)<br>SEG 0 (1) ..... S12(4) SEG 6 (7) ..... S6(10)<br>SEG 1 (2) ..... S11(5) SEG 7 (8) ..... S5(11)<br>SEG 2 (3) ..... S10(6) SEG 8 (9) ..... S4(12)<br>SEG 3 (4) ..... S9(7) SEG 9 (10) ..... S3(13)<br>SEG 4 (5) ..... S8(8) SEG 10 (11) ..... S2(14)<br>SEG 5 (6) ..... S7(9) SEG 11(12) ..... S1(15) |
| 13 | R60 | OUT | **Tact switch strobe signal.**<br>Signal applied to tact switch section. A pulse signal is input to R81 terminal while the tact switch SW1 is touched. |
| 14 | R61 | OUT | **Tact switch strobe signal.**<br>Signal applied to tact switch section. A pulse signal is input to R81 terminal while the tact switch SW2 is touched. |
| 15 | R62 | OUT | **Tact switch strobe signal.**<br>Signal applied to tact switch section. A pulse signal is input to R81 terminal while the tact switch SW3 is touched. |
| 16 | R63 | OUT | **Tact switch strobe signal.**<br>Signal applied to tact switch section. A pulse signal is input to R81 terminal while the tact switch SW4 is touched. |
| 17 | AIN0 | IN | **To input signal which communicates the door open/close information to LSI.**<br>Door close "L" level signal (0V). Door open "H" level (+5V) |
| 18-20 | AIN1-AIN3 | IN | **Terminal to change functions according to the Model.**<br>By using the A/D converter contained in the LSI, DC voltage in accordance with the Model in operation is applied to set up its function. |
| 21 | VSS | IN | **Power source voltage: 0V**<br>VSS voltage of power source circuit input. |
| 22 | R70 | OUT | **Magnetron high-voltage circuit driving signal.**<br>To turn on and off the cook relay (RY2). The signals holds "L" level during microwave cooking and "H" level while not cooking. In other cooking modes (variable cooking) the signal turns to "H" level and "L" level in repetition according to the power level.<br>  |
| 23 | R71 | OUT | **Signal to sound buzzer (2.0 kHz).**<br>A: key touch sound.<br>B: Completion sound.<br>  |

# TOUCH CONTROL PANEL ASSEMBLY

| Pin No. | Signal | I/O | Description |
|---|---|---|---|
| 24 | R72 | OUT | **Oven lamp, fan motor and turntable motor driving signal**<br>To turn on and off shut off relay (RY1). The square waveform voltage is delivered to the RY1 driving circuit.<br>  |
| 25 | R73 | IN | **Signal coming from encoder.**<br>When the encoder is turned, the contacts of encoder make pulse signals. And pulse signals are input into R73. |
| 26 | INT2 | IN | **Signal synchronized with commercial power source frequency.**<br>This is the basic timing for time processing of LSI.<br>  |
| 27 | R81 | IN | **Signal coming from tact switch.**<br>When either of tact switches SW1-SW4 is touched, a corresponding signal out of R0, R61, R62 and R63 will be input into R81. When no key is touched, the signal is held at "H" level. |
| 28 | INT1 | IN | **Signal coming from encoder.**<br>Signal similar to R73. Pulse signals are input into INT1. |
| 29 | R83 | OUT | Connected to VSS. |
| 30-32 | R90-R92 | OUT | Connected to VSS. |
| 33 | XIN | IN | **Internal clock oscillation frequency setting input.**<br>The internal clock frequency is set by inserting the ceramic filter oscillation circuit with respect to XOUT terminal. |
| 34 | XOUT | OUT | **Internal clock oscillation frequency control output.**<br>Output to control oscillation input of XIN. |
| 35 | RESET | IN | **Auto clear terminal.**<br>Signal is input to reset the LSI to the initial state when power is supplied. Temporarily set "L" level the moment power is supplied, at this time the LSI is reset. Thereafter set at "H" level. |
| 36 | HOLD | IN/OUT | Connected to VDD. |
| 37 | VLC | IN | **Signal synchronized with commercial power source frequency.**<br>Signal similar to VSS. |
| 38 | COM1 | OUT | **Common data signal: COM1.**<br>Connected to LCD (Pin No. 1) |
| 39 | COM2 | OUT | **Common data signal: COM2.**<br>Connected to LCD (Pin No. 2) |
| 40 | COM3 | OUT | **Common data signal: COM1.**<br>Connected to LCD (Pin No. 3) |
| 41 | COM4 | OUT | Terminal not used. |
| 42 | VDD | IN | **Power source voltage input terminal.**<br>Connected to VC. |

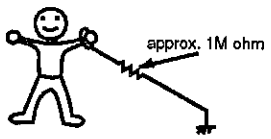
# SERVICING

**1. Precautions for Handling Electronic Components**

This unit uses CMOS LSI in the integral part of the circuits. When handling these parts, the following precautions should be strictly followed. CMOS LSI have extremely high impedance at its input and output terminals. For this reason, it is easily influenced by the surrounding high voltage power source, static electricity charge in clothes, etc., and sometimes it is not fully protected by the built-in protection circuit.

In order to protect CMOS LSI.

1) When storing and transporting, thoroughly wrap them in aluminium foil. Also wrap PW boards containing them in aluminium foil.
2) When soldering, ground the technician as shown in the figure and use grounded soldering iron and work table.




**2. Shapes of Electronic Components**

Transistor
2SA1267Y
KRA101M
KRC101M
KRC105M

**3. Servicing of Touch Control Panel**

We describe the procedures to permit servicing of the touch control panel of the microwave oven and the precautions you must take when doing so.

To perform the servicing, power to the touch control panel is available either from the power line of the oven itself or from an external power source.

**(1) Servicing the touch control panel with power supply of the oven :**

**CAUTION:**
**THE HIGH VOLTAGE TRANSFORMER OF THE MICROWAVE OVEN IS STILL LIVE DURING SERVICING AND PRESENTS A HAZARD .**

Therefore, when checking the performance of the touch control panel, put the outer cabinet on the oven to avoid touching the high voltage transformer, or unplug the primary terminal (connector) of the high voltage transformer to turn it off; the end of such connector must be insulated with an insulating tape. After servicing, be sure to replace the leads to their original locations.

**A.** On some models, the power supply cord between the touch control panel and the oven itself is so short that the two can't be separated.

For those models, check and repair all the controls (sensor-related ones included) of the touch control panel while keeping it connected to the oven.

**B.** On some models, the power supply cord between the touch control panel and the oven proper is long enough that they may be separated from each other. For those models, therefore, it is possible to check and repair the controls of the touch control panel while keeping it apart from the oven proper; in this case you must short both ends of the door sensing switch (on PWB) of the touch control panel with a jumper, which brings about an operational state that is equivalent to the oven door being closed. As for the sensor-related controls of the touch control panel, checking them is possible if the dummy resistor(s) with resistance equal to that of the controls are used.

**(2) Servicing the touch control panel with power supply from an external power source:**

Disconnect the touch control panel completely from the oven proper, and short both ends of the door sensing switch (on PWB) of the touch control panel, which brings about an operational state that is equivalent to the oven door being closed. Connect an external power source to the power input terminal of the touch control panel, then it is possible to check and repair the controls of the touch control panel; it is also possible to check the sensor-related controls of the touch control panel by using the dummy resistor(s).

**4. Servicing Tools**

Tools required to service the touch control panel assembly.

1) Soldering iron: 30W
(It is recommended to use a soldering iron with a grounding terminal.)
2) Oscilloscope: Single beam, frequency range: DC - 10MHz type or more advanced model.
3) Others: Hand tools

**5. Other Precautions**

1) Before turning on the power source of the control unit, remove the aluminium foil applied for preventing static electricity.
2) Connect the connector of the key unit to the control unit being sure that the lead wires are not twisted.
3) After aluminium foil is removed, be careful that abnormal voltage due to static electricity etc. is not applied to the input or output terminals.
4) Attach connectors, electrolytic capacitors, etc. to PWB, making sure that all connections are tight.
5) Be sure to use specified components where high precision is required.

# COMPONENT REPLACEMENT AND ADJUSTMENT PROCEDURE

**WARNING: Avoid possible exposure to microwave energy. Please follow the instructions below before operating the oven.**

1. CARRY OUT 3D CHECKS.
2. Make sure that a definite "click" can be heard when the microwave oven door is unlatched. (Hold the door in a closed position with one hand, then push the door open button with the other, this causes the latch heads to rise, it is then possible to hear a "click" as the door switches operate.)
3. Visually check the door and cavity face plate for damage (dents, cracks, signs of arcing etc.).

Carry out any remedial work that is necessary before operating the oven.
Do not operate the oven if any of the following conditions exist;

1. Door does not close firmly.
2. Door hinges or latch hook is damaged.
3. The door seal is damaged.
4. The door is bent or warped.
5. There are defective parts in the door interlock system.
6. There are defective parts in the microwave generating and transmission assembly.
7. There is visible damage to the oven.

Do not operate the oven:

1. Without the RF gasket (Magnetron).
2. If the wave guide or oven cavity are not intact.
3. If the door is not closed.
4. If the outer case (cabinet) is not fitted.

Please refer to 'OVEN PARTS, CABINET PARTS, DOOR PARTS', when carrying out any of the following removal procedures:

## OUTER CASE REMOVAL

To remove the outer case, proceed as follows.

1. Disconnect oven from power supply.
2. Remove the screws from rear and along the side edge of case.
3. Slide the entire case back about 3cm to free it from retaining clips on the cavity face plate.
4. Lift the entire case from the oven.
5. Discharge the H.V. capacitor before carrying out any further work.
6. Do not operate the oven with the outer case removed.

N.B.; Step 1, 2 and 6 form the basis of the 3D checks.

CAUTION: DISCHARGE HIGH VOLTAGE CAPACITOR BEFORE TOUCHING ANY OVEN COMPONENTS OR WIRING.

## HIGH VOLTAGE COMPONENTS REMOVAL (HIGH VOLTAGE CAPACITOR AND HIGH VOLTAGE RECTIFIER ASSEMBLY)

To remove the components, proceed as follows.

1. CARRY OUT 3D CHECKS
2. Disconnect all the leads and terminals of high voltage rectifier assembly from high voltage capacitor.
3. Remove one (1) screw holding earth side terminal of high voltage rectifier assembly, and remove capacitor holder from the base plate.
4. Remove the capacitor from the capacitor holder.
5. Now high voltage rectifier assembly and capacitor should be free.

CAUTION: WHEN REPLACING HIGH VOLTAGE RECTIFIER ASSEMBLY, ENSURE THAT THE CATHODE (EARTH) CONNECTION IS SECURELY FIXED TO THE CAPACITOR HOLDER AND BASEPLATE WITH AN EARTHING SCREW.

## POWER TRANSFORMER REMOVAL

1. CARRY OUT 3D CHECKS
2. Disconnect the filament leads of the power transformer from high voltage capacitor and the magnetron.
3. Disconnect the H.V. wire A from the power transformer.
4. Remove the four (4) screws holding the transformer to base plate.
5. Remove the transformer.
6. Now, the power transformer is free.

# COMPONENT REPLACEMENT AND ADJUSTMENT PROCEDURE

## MAGNETRON REMOVAL

1. CARRY OUT 3D CHECKS.
2. Disconnect the H.V. wire B and filament lead of the transformer from the magnetron.
3. Remove chassis support screws. Remove the one (1) screw holding the chassis support to the magnetron.
4. Move the air intake duct to left.
5. Carefully remove two (2) screws holding magnetron to waveguide, when removing the screws hold the magnetron to prevent it from falling.
6. Remove the magnetron from the waveguide with care so that the magnetron antenna is not hit by any metal object around the antenna.

CAUTION: WHEN REPLACING THE MAGNETRON, BE SURE THE R.F. GASKET IS IN PLACE AND THE MAGNETRON MOUNTING SCREWS ARE TIGHTENED SECURELY.

## FAN MOTOR REMOVAL

1. Remove fan motor wires two (2).
2. Remove the two (2) screws holding the motor to the oven cavity.
3. Remove fan from motor shaft.
4. Now the fan motor is free.

## CONTROL PANEL REMOVAL

1. CARRY OUT 3D CHECKS
2. Disconnect the main harness from the timer motor.
3. Remove the one (1) screws holding the control panel to the oven cavity.
4. Lift up the control panel assembly and pull it forward. Now, the control panel assembly is free.

## TURNTABLE MOTOR REMOVAL

1. Disconnect the oven from power supply.
2. Remove the turntable motor cover by snipping of material in four corners.
3. Where the corners have been snipped off bend corner areas flat. No sharp edge must be evident after removal of TT motor cover.
4. Disconnect the wire lead from turntable motor and remove the 1 (one) screw holding the turntable motor.
5. Turntable is now free.
6. After replacement use the one (1) screw provided with the turntable motor assembly to fit the turntable motor cover.

## OVEN LAMP REMOVAL

1. CARRY OUT 3D CHECKS
2. Release the terminals from the oven lamp .
3. Lift up the oven lamp from its retaining clips.
4. Now, the oven lamp is free.

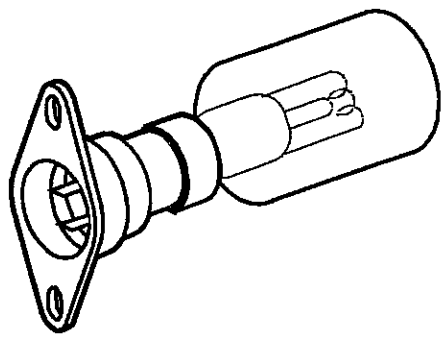


**Figure C-2. Oven lamp**

# COMPONENT REPLACEMENT AND ADJUSTMENT PROCEDURE

## POWER SUPPLY CORD REPLACEMENT

**Removal**

1. CARRY OUT 3D CHECKS.
2. Remove the single (1) screw holding the green/yellow wire to the cavity.
3. Disconnect the leads of the power supply cord from the noise filter, referring to the Figure C-3 (a).
4. Release the power supply cord from the rear cabinet.
5. Now, the power supply cord is free.

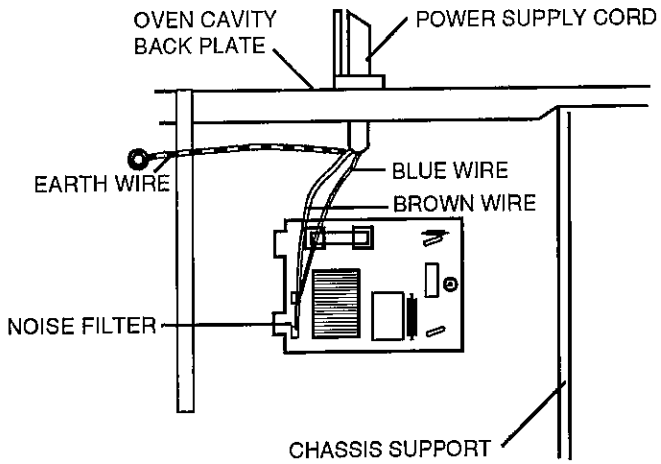



**Figure C-3 (a) Replacement of Power Supply Cord**

**Re-Install**

1. Insert the moulding cord stopper of power supply cord into the square hole of the rear cabinet, referring to the Figure C-3 (b). Installation of Power supply cord.
2. Install the earth wire lead of power supply cord to the cavity with one (1) screw and tighten the screw.
3. Connect the brown and blue wire leads of power supply cord to the noise filter correctly, referring to the Pictorial Diagram.

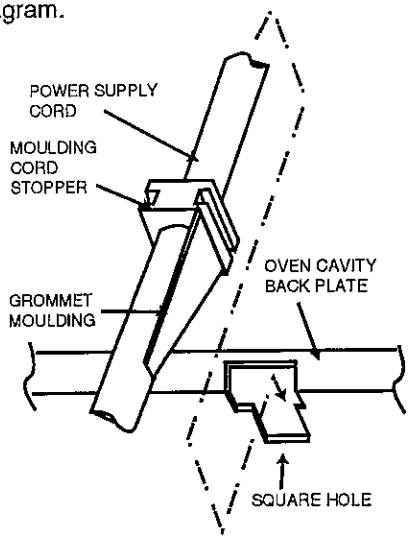



**Figure C-3 (b) Replacement of Power Supply Cord**

## MONITORED LATCH SWITCH, STOP SWITCH AND MONITOR SWITCH REMOVAL

1. CARRY OUT 3D CHECKS.
2. Remove the control panel assembly referring to "CONTROL PANEL REMOVAL".
3. Disconnect the leads from all switches.
4. Remove the one (1) screw holding the latch hook to the oven cavity.
5. Remove the latch hook.
6. Push the retaining tab slightly and remove the switch.

## LATCH HEAD REMOVAL

1. Remove door frame.
2. Release the latch spring from the tabs of the door frame.
3. Release the latch spring from the latch head.
4. Release the latch head from the door panel.
5. Now, the latch head is free.

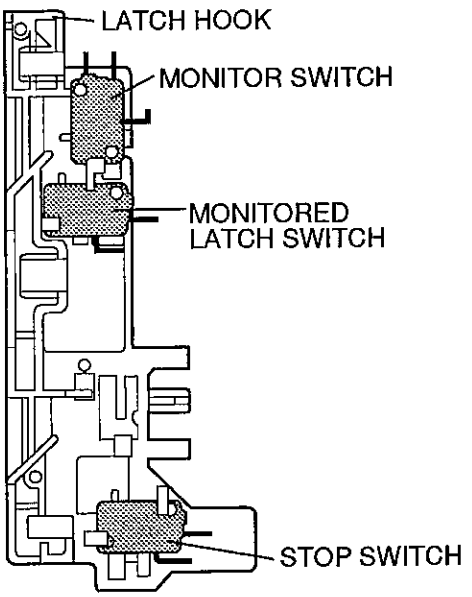



**Figure C-4. Switches**

# COMPONENT REPLACEMENT AND ADJUSTMENT PROCEDURE

## DOOR REPLACEMENT AND ADJUSTMENT

### DOOR REPLACEMENT

1. CARRY OUT 3D CHECKS
2. Remove non return washer from bottom of door hinge.
3. Remove choke cover taking care not to break clips.
4. Remove door assembly by lifting and easing it forward.
5. Make sure the door is parallel with bottom line of the oven face plate and the latch head pass through the latch holes correctly.
6. CARRY OUT 4R CHECKS

NOTE: After any service to the door, the approved microwave survey meter should be used to assure in compliance with proper microwave radiation standards. (Refer to Microwave Measurement Procedure).

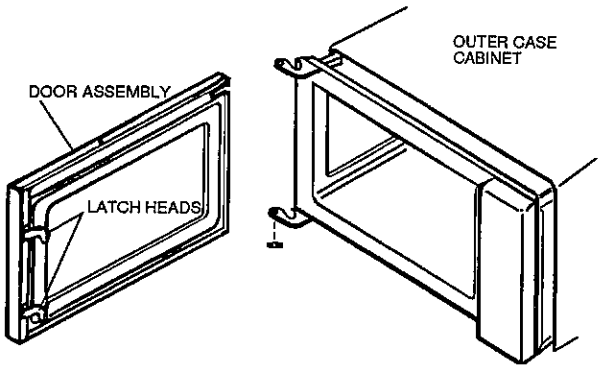



**Figure C-5. Door Assembly Replacement and Adjustment**

### CHOKE COVER REMOVAL

1. Insert an iron plate(thickness of about 0.5mm) or flat type screw driver to the gap between the choke cover and door panel as shown figure to free the engaged part. The protect sheet may be used not to damage the door panel.
2. Lift up the choke cover, now choke cover is free.

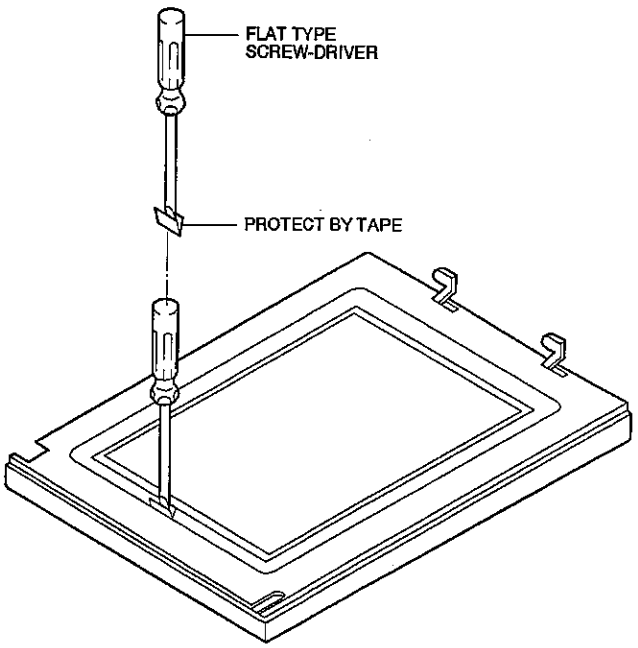



**Figure C-6. Choke Cover Removal**

## INNER DOOR FILM

### Removal

1. Tear the door film from the door panel.
2. Now, the door film is free.

### Installation

1. Remove backing tape from door film as shown in Fig 7.
2. Put the adhesive side of the door film on the door panel.

## OUTER DOOR FILM

### Removal

1. Remove the door film from the clips on the door frame.

### Installation

1. Attach the door film to the clips on the door frame.

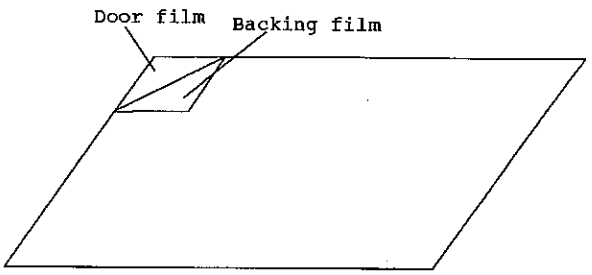



**Figure C-7. Door Film**

# MICROWAVE MEASUREMENT

After adjustment of door latch switches, monitor switch and door are completed individually or collectively, the following leakage test must be performed with a survey instrument and it must be confirmed that the result meets the requirements of the performance standard for microwave oven.

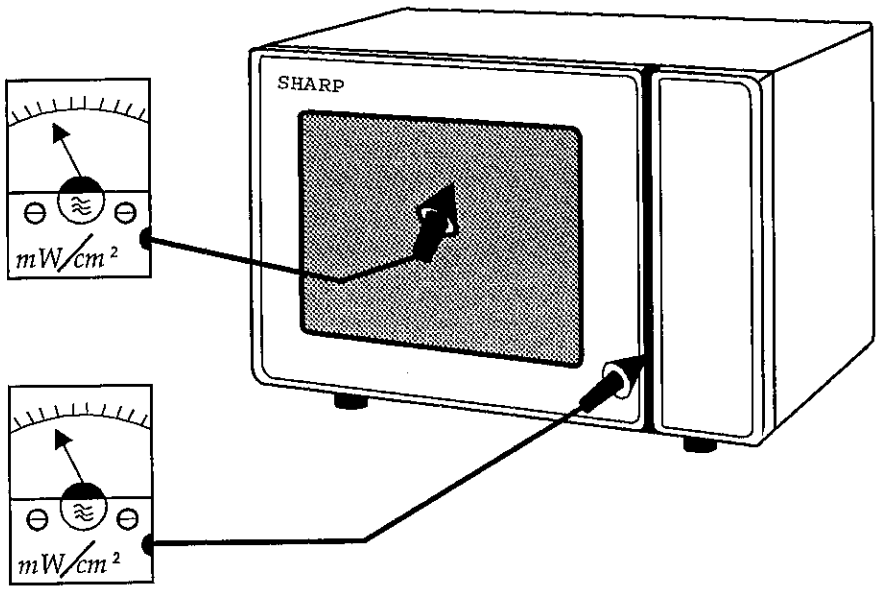
## REQUIREMENT

The safety switch must prevent microwave radiation emission in excess of 5mW/cm2 at any point 5cm or more from external surface of the oven.

## PREPARATION FOR TESTING:

Before beginning the actual test for leakage, proceed as follows;

1. Make sure that the test instrument is operating normally as specified in its instruction booklet.
   Important:
   Survey instruments that comply with the requirement for instrumentations as prescribed by the performance standard for microwave ovens must be used for testing.
   Recommended instruments are:
   NARDA 8100
   NARDA 8200
   HOLADAY HI 1500
   SIMPSON 380M
2. Place the oven tray into the oven cavity.
3. Place the load of 275 ± 15ml of water initially at 20 ± 5°C in the center of the oven tray. The water container should be a low form of 600 ml beaker with inside diameter of approx. 8.5cm and made of an electrically non-conductive material such as glass or plastic.
   The placing of this standard load in the oven is important not only to protect the oven, but also to insure that any leakage is measured accurately.
4. Close the door and turn the oven ON with the timer set for several minutes. If the water begins to boil before the survey is completed, replace it with 275ml of cool water.
5. Move the probe slowly (not faster that 2.5cm/sec.) along the gap.
6. The microwave radiation emission should be measured at any point of 5cm or more from the external surface of the oven.




**Microwave leakage measurement at 5 cm distance**

# TEST DATA AT A GLANCE

| Parts | Symbol | Value / Data |
|---|---|---|
| Fuse | F1 | F6.3A 250V |
| Monitor fuse | F2 | T160mA |
| Thermal cut-out (MG) | TC1 | 145°C |
| Thermal cut-out (OVEN) | TC2 | 125°C |
| Oven lamp | OL | 230-240V 25W |
| High voltage capacitor | C | 0.94μ AC 1900V |
| Magnetron | MG | Filament < 1Ω<br>Filament – chassis ∞ ohm. |
| Power transformer | T | Filament winding < 1Ω<br>Secondary winding Approx. 140Ω<br>Primary winding Approx. 2.3Ω |

# WIRING DIAGRAMS

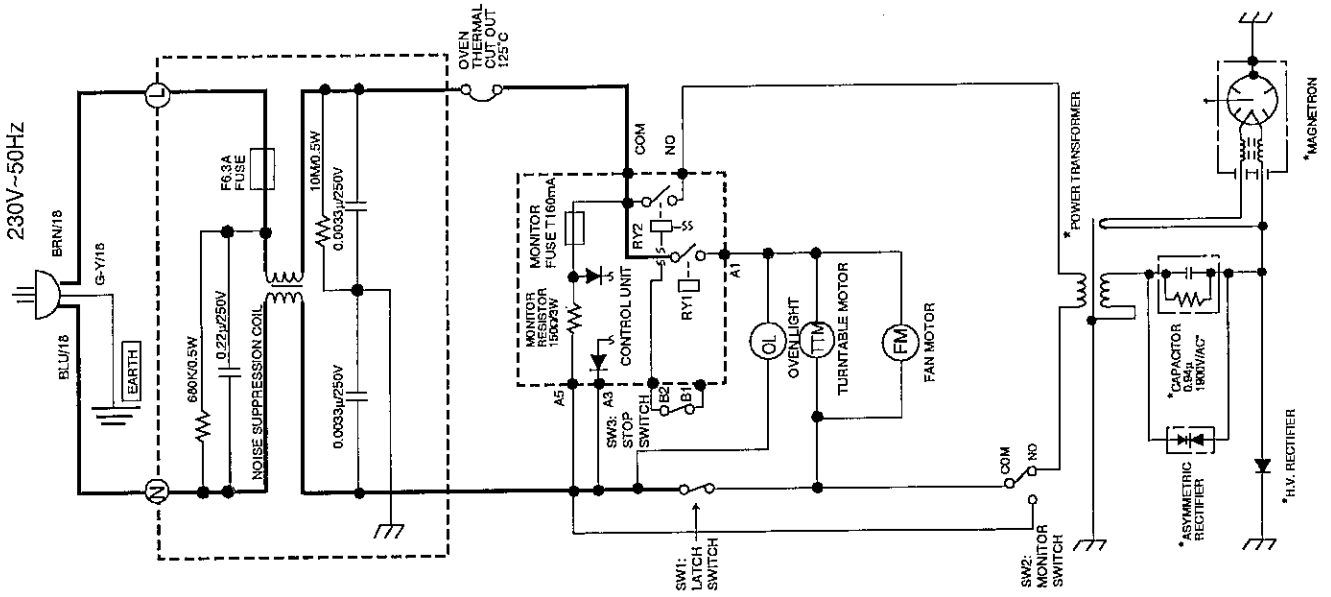



**Figure O-1 Oven Schematic-OFF Condition, Door Closed.**

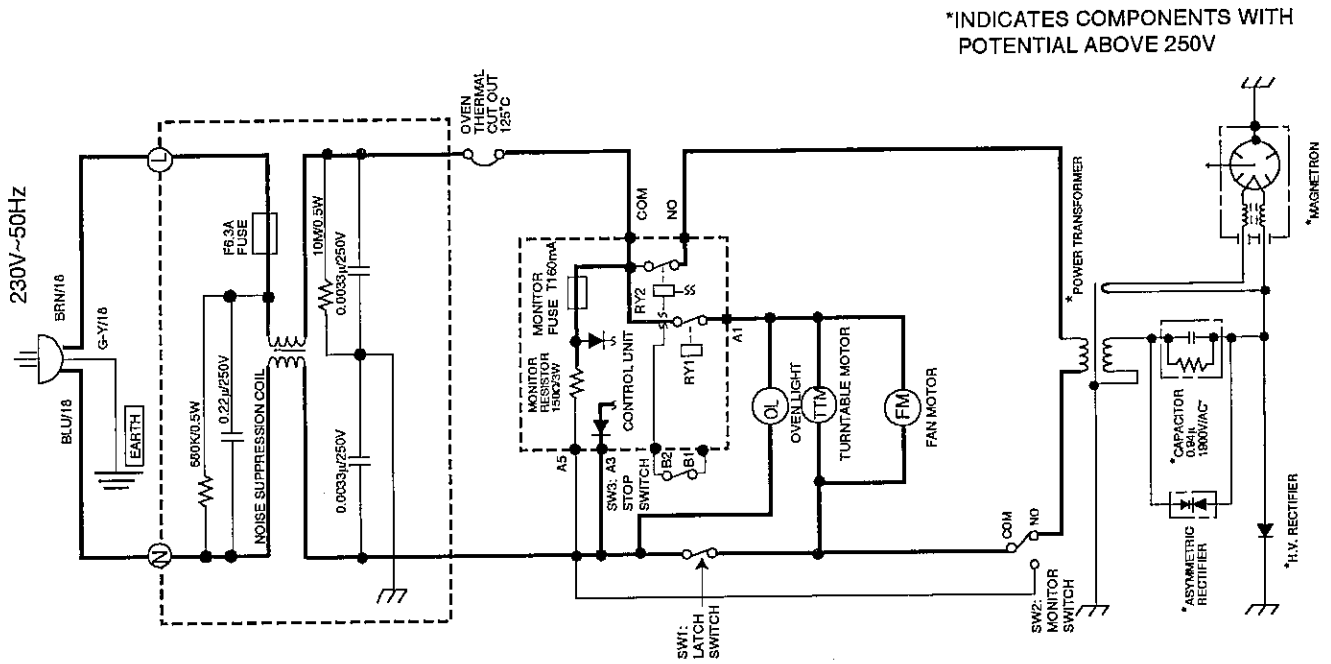



**Figure O-2 Oven Schematic-ON Condition, Door Closed.**

# WIRING DIAGRAMS

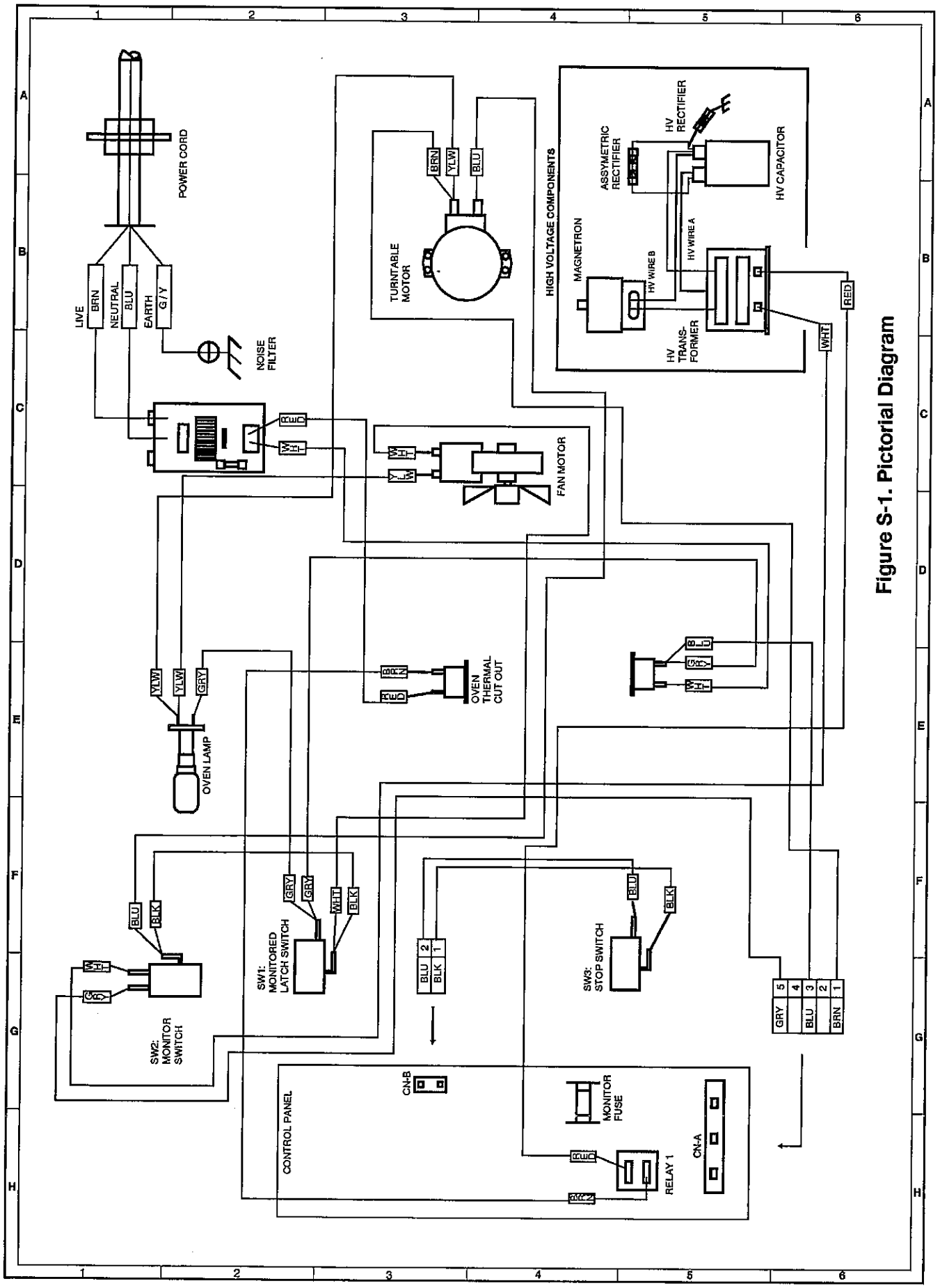



Figure S-1. Pictorial Diagram

# WIRING DIAGRAMS

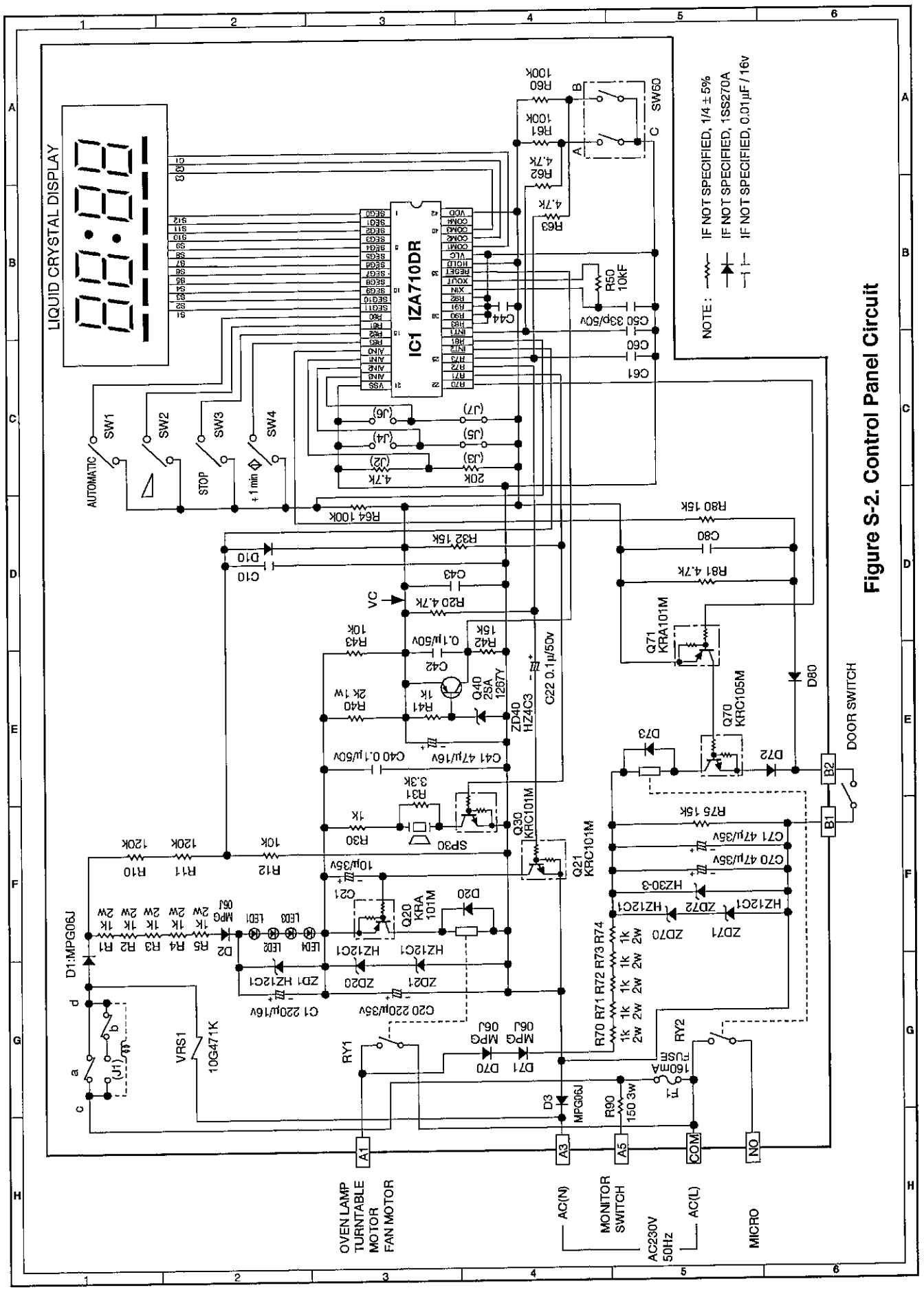



**Figure S-2. Control Panel Circuit**

# WIRING DIAGRAMS

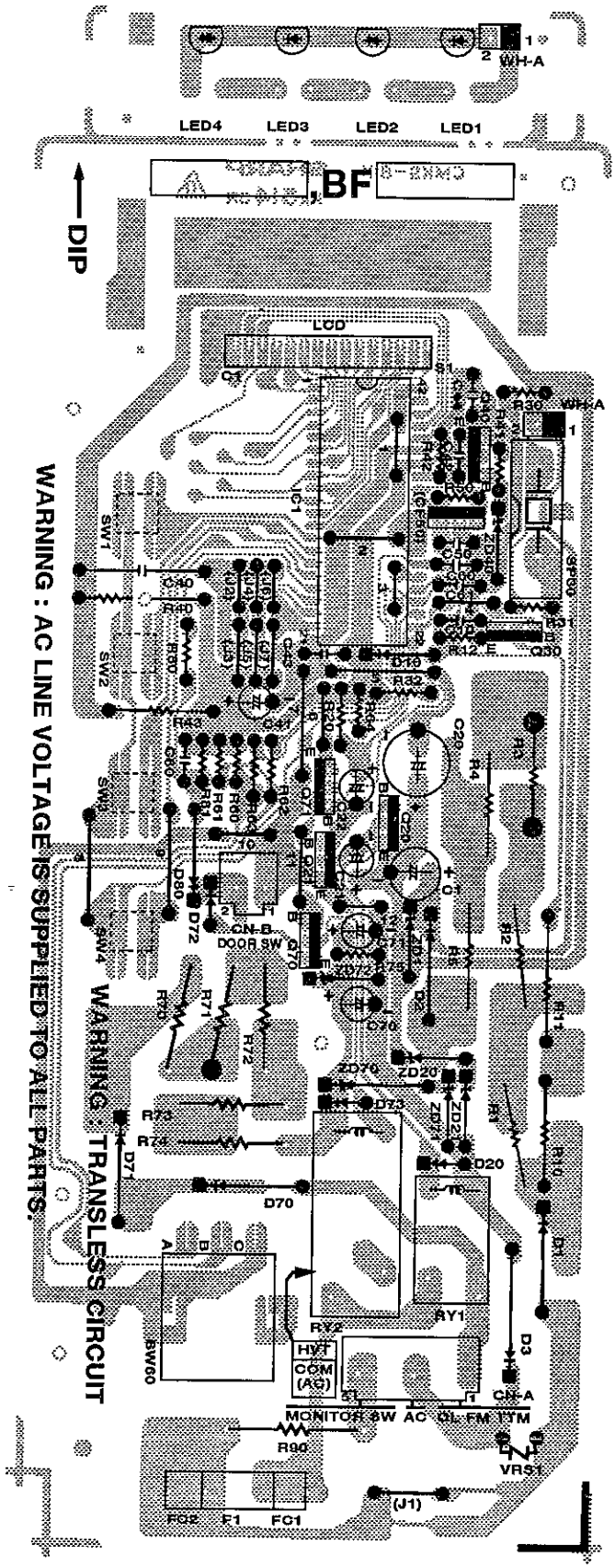



Figure S-3. Printed Wiring Board

# PARTS LIST

Note: The parts marked "*" are used in voltage more than 250V. The parts marked "Δ" may cause undue microwave exposure.
"§" MARK: SPARE PARTS-DELIVERY SECTION

## ELECTRIC PARTS

| | REF. NO. | PART NO. | § | DESCRIPTION | QTY | CODE |
|---|---|---|---|---|---|---|
| * | 1-1 | FH-DZA035WRE0 | U | H.V. rectifier assembly | 1 | AP |
| * | 1-2 | RC-QZA184WRE0 | U | High voltage capacitor | 1 | AX |
| | 1-3 | QSW-MA110WRE0 | J | Monitored Latch Switch | 1 | AK |
| | 1-4 | QSW-MA112WRE0 | U | Monitor Switch | 1 | AN |
| | 1-5 | QSW-MA110WRE0 | J | Stop Switch | 1 | AK |
| | 1-6 | FPWBFA301WRE0 | U | Noise filter | 1 | AQ |
| | 1-7 | QFS-CA011WRE0 | U | Fuse F6.3A | 1 | AC |
| | 1-11 | RTHM-A078WRE0 | U | Thermal cut-out 125°C (Oven) | 1 | AL |
| | 1-12 | RTHM-A080WRE0 | U | Thermal cut-out 145°C (Magnetron) | 1 | AL |
| | 1-13 | FACCVA010WRK0 | U | Power supply cord | 1 | AN |
| | 1-14 | RMOTEA339WRE0 | U | Fan motor | 1 | AU |
| Δ* | 1-15 | RV-MZA195WRE0 | U | Magnetron | 1 | BF |
| | 1-16 | RLMPTA067WRE0 | U | Oven lamp | 1 | AK |
| | 1-17 | FMOTDA056WRK0 | J | Turntable motor assy | 1 | AR |
| * | 1-18 | RTRN-A003URE0 | U | Power transformer | 1 | BH |

## CABINET PARTS

| REF. NO. | PART NO. | § | DESCRIPTION | QTY | CODE |
|---|---|---|---|---|---|
| 2-1 | GCABUA001URP0 | U | Outer case cabinet (B) | 1 | AT |
| 2-1 | GCABUA573WRT0 | U | Outer case cabinet (W) | 1 | AT |
| 2-1 | GCABUA002URP0 | U | Outer case cabinet (BK) | 1 | AT |
| 2-2 | GLEGPA057WRE0 | U | Foot | 2 | AB |

## CONTROL PANEL PARTS

| REF. NO. | PART NO. | § | DESCRIPTION | QTY | CODE |
|---|---|---|---|---|---|
| 3- 1 | CPWBFA692WRK0 | J | Control unit [R-2J28(W/B/BK) | 1 | BL |
| 3- 1 | CPWBFA693WRK0 | J | Control unit [R-2J58(W/B) R-2J68 (W/B)] | 1 | BL |
| 3- 1A | QCNCMA234DRE0 | J | 3-pin connector (CN-A) | 1 | AC |
| 3- 1B | QCNCMA275DRE0 | J | 2-pin connector (CN-B) | 1 | AB |
| 3- 1C | FW-VZA196DRE0 | J | Lead wire harness (WH-A) | 1 | AD |
| 3- 1D | RLCDSA036DRE0 | J | Liquid crystal display | 1 | AP |
| 3- 1E | LHLD-A167WRF0 | J | LCD holder | 1 | AM |
| 3- 1F | PSHEPA569WRE0 | J | LCD sheet | 1 | AE |
| C1 | VCEAB31CW227M | J | Capacitor 220 uF 16V | 1 | AB |
| C10 | VCKYD11CY103N | J | Capacitor 0.01 uF 16V | 1 | AH |
| C20 | VCEAB31VW227M | J | Capacitor 220 uF 35V | 1 | AC |
| C21 | VCEAB31VW106M | J | Capacitor 10 uF 35V | 1 | AB |
| C22 | VCEAB31HW104M | J | Capacitor 0.1 uF 50V | 1 | AM |
| C40 | RC-KZA087DRE0 | J | Capacitor 0.1 uF 50V | 1 | AB |
| C41 | VCEAB31CW476M | J | Capacitor 47 uF 16V | 1 | AA |
| C42 | RC-KZA087DRE0 | J | Capacitor 0.1 uF 50V | 1 | AB |
| C43-44 | VCKYD11CY103N | J | Capacitor 0.01 uF 16V | 2 | AH |
| C50 | VCCCF61HH330J | J | Capacitor 33 pF 50V | 1 | AD |
| C60-61 | VCKYD11CY103N | J | Capacitor 0.01 uF 16V | 2 | AH |
| C70-71 | VCEAB31VW476M | J | Capacitor 47 uF 35V | 2 | AB |
| C80 | VCKYD11CY103N | J | Capacitor 0.01 uF 16V | 1 | AH |
| D1-3 | VHDMPG06J//-1 | J | Diode (MPG06J) | 3 | AD |
| D10 | VHD1SS270A/-1 | J | Diode (1SS270ATA) | 1 | AA |
| D20 | VHD1SS270A/-1 | J | Diode (1SS270ATA) | 1 | AA |
| D70-71 | VHDMPG06J//-1 | J | Diode (MPG06J) | 2 | AD |
| D72-73 | VHD1SS270A/-1 | J | Diode (1SS270ATA) | 2 | AA |
| D80 | VHD1SS270A/-1 | J | Diode (1SS270ATA) | 1 | AA |
| FC1-2 | QFSHDA022WRE0 | J | Fuse clip | 2 | AB |
| IC1 | RH-IZA710DRE0 | J | LSI | 1 | AN |
| LED1-4 | VHPSLZ781C9-3 | J | Light emitting diode | 4 | AD |
| Q20 | VSKRA101M//-3 | J | Transistor (KRA101M) | 1 | AB |
| Q21 | VSKRC101M//-3 | J | Transistor (KRC101M) | 1 | AB |
| Q30 | VSKRC101M//-3 | J | Transistor (KRC101M) | 1 | AB |

# PARTS LIST

Note: The parts marked "*" are used in voltage more than 250V. The parts marked "Δ" may cause undue microwave exposure.
"§" MARK: SPARE PARTS-DELIVERY SECTION

## CONTROL PANEL CONT

| REF. NO. | PART NO. | § | DESCRIPTION | QTY | CODE |
|---|---|---|---|---|---|
| Q40 | VS2SA1267Y/-3 | J | Transistor (2SA1267Y) | 1 | AA |
| Q70 | VSKRC105M//-3 | J | Transistor (KRC105M) | 1 | AB |
| Q71 | VSKRA101M//-3 | J | Transistor (KRA101M) | 1 | AB |
| R1-5 | VRS-L63DA102J | J | Resistor 1.0k ohm 2W | 5 | AB |
| R10-11 | VRD-B12EF124J | J | Resistor 120k ohm 1/4W | 2 | AA |
| R12 | VRD-B12EF103J | J | Resistor 10k ohm 1/4W | 1 | AA |
| R20 | VRD-B12EF472J | J | Resistor 4.7k ohm 1/4W | 1 | AA |
| R30 | VRD-B12EF102J | J | Resistor 1.0k ohm 1/4W | 1 | AA |
| R31 | VRD-B12EF332J | J | Resistor 3.3k ohm 1/4W | 1 | AA |
| R32 | VRD-B12EF153J | J | Resistor 15k ohm 1/4W | 1 | AA |
| R40 | VRS-B13AA202J | J | Resistor 2.0k ohm 1W | 1 | AB |
| R41 | VRD-B12EF102J | J | Resistor 1.0k ohm 1/4W | 1 | AA |
| R42 | VRD-B12EF153J | J | Resistor 15k ohm 1/4W | 1 | AA |
| R43 | VRD-B12EF103J | J | Resistor 10k ohm 1/4W | 1 | AA |
| R50 | VRN-B12EK103F | J | Resistor 10k ohm 1/4W | 1 | AA |
| R60-61 | VRD-B12EF104J | J | Resistor 100k ohm 1/4W | 2 | AA |
| R62-63 | VRD-B12EF472J | J | Resistor 4.7k ohm 1/4W | 2 | AA |
| R64 | VRD-B12EF104J | J | Resistor 100k ohm 1/4W | 1 | AA |
| R70-74 | VRS-L63DA102J | J | Resistor 1.0k ohm 2W | 5 | AB |
| R75 | VRD-B12EF153J | J | Resistor 15k ohm 1/4W | 1 | AA |
| R80 | VRD-B12EF153J | J | Resistor 15k ohm 1/4W | 1 | AA |
| R81 | VRD-B12EF472J | J | Resistor 4.7k ohm 1/4W | 1 | AA |
| R90 | RR-DZA196DRE0 | J | Resistor 150 ohm 3W | 1 | AE |
| (J2) | VRD-B12EF472J | J | Resistor 4.7k ohm 1/4W | 1 | AA |
| (J3) | VRD-B12EF203J | J | Resistor 20k ohm 1/4W | 1 | AA |
| (J6) | VRD-B12EF203J | J | Resistor 20k ohm 1/4W [R-2J28(B/W/BK)] | 1 | AA |
| (J7) | VRD-B12EF472J | J | Resistor 4.7k ohm 1/4W [R-2J28(B/W/BK)] | 1 | AA |
| RY1 | RRLY-A080DRE0 | J | Relay (OJ-SH-124LM) | 1 | AG |
| RY2 | RRLY-A100DRE0 | J | Relay (OMIF-S-124LM-SP) | 1 | AM |
| SP30 | RALM-A014DRE0 | J | Buzzer (PKM22EPT-THAI) | 1 | AG |
| SW1-4 | QSW-PA004DRE0 | J | Tact switch | 4 | AB |
| SW60 | RVR-BA018WRE0 | J | Encoder | 1 | AL |
| VRS1 | RH-VZA034DRE0 | J | Varistor (10G471K) | 1 | AD |
| ZD1 | VHEHZ12C1//-1 | J | Zener diode (HZ12C1) | 1 | AA |
| ZD20-21 | VHEHZ12C1//-1 | J | Zener diode (HZ12C1) | 2 | AA |
| ZD40 | VHEHZ4C3///-1 | J | Zener diode (HZ4C-3) | 1 | AA |
| ZD70-71 | VHEHZ12C1//-1 | J | Zener diode (HZ12C1) | 2 | AA |
| ZD72 | VHEHZ303///-1 | J | Zener diode (HZ30-3) | 1 | AB |
| 3- 2 | GMADIA001URF0 | U | Display window | 1 | AD |
| 3- 3 | HPNLCA001URR0 | U | Control panel [R-2J28(B)] | 1 | AP |
| 3- 3 | HPNLCA002URR0 | U | Control panel [R-2J28(W)] | 1 | AP |
| 3- 3 | HPNLCA003URR0 | U | Control panel [R-2J28(BK)] | 1 | AP |
| 3- 3 | HPNLCA004URR0 | U | Control panel [R-2J58(W)] | 1 | AP |
| 3- 3 | HPNLCA006URR0 | U | Control panel [R-2J68(W)] | 1 | AP |
| 3- 3 | HPNLCA007URR0 | U | Control panel [R-2J68(B)] | 1 | AP |
| 3- 4 | JBTN-A004URF0 | U | Key button [R-2J28/58/68(W)] | 1 | AE |
| 3- 4 | JBTN-A005URF0 | U | Key button [R-2J28/68(B)] | 1 | AE |
| 3- 4 | JBTN-A007URF0 | U | Key button [R-2J28(BK)] | 1 | AE |
| 3- 5 | JKNBKA001URF0 | U | Rotary knob [R-2J28/68(B)] | 1 | AE |
| 3- 5 | JKNBKA002URF0 | U | Rotary knob [R-2J28/58/68(W)] | 1 | AE |
| 3- 5 | JKNBKA003URF0 | U | Rotary button [R-2J28(BK)] | 1 | AE |
| 3- 6 | JBTN-A001URF0 | U | Open button [R-2J28/68(B)] | 1 | AE |
| 3- 6 | JBTN-B009WRF0 | U | Open button [R-2J28/58/68(W)] | 1 | AE |
| 3- 6 | JBTN-A003URF0 | U | Open button [R-2J28(BK)] | 1 | AC |
| 3- 7 | MSPRCA045WRE0 | U | Open button spring | 1 | AA |
| 3- 8 | QFS-CA023URE0 | U | Fuse T160mA | 1 | AB |
| 3- 9 | LSTPPA001URF0 | U | Stopper | 1 | AC |
| 3- 10 | XEPSD30P08XS0 | J | Screw; 3mm x 8mm | 4 | AA |

# PARTS LIST

Note: The parts marked "*" are used in voltage more than 250V. The parts marked "Δ" may cause undue microwave exposure.
"§" MARK: SPARE PARTS-DELIVERY SECTION

## OVEN PARTS

| | REF. NO. | PART NO. | § | DESCRIPTION | QTY | CODE |
|---|---|---|---|---|---|---|
| | 4-1 | DOVN-A439WRT0 | U | Oven cavity | 1 | BD |
| | 4-2 | LBNDKA111WRP0 | U | Capacitor holder | 1 | AD |
| | 4-3 | PHOK-A092WRF3 | U | Latch hook | 1 | AH |
| | 4-4 | NFANJA035WRE0 | U | Fan blade | 1 | AK |
| | 4-5 | PDUC-A638WRF0 | U | Fan duct | 1 | AM |
| | 4-6 | LANGFA168WRP3 | U | Chassis support | 1 | AE |
| | 4-7 | PPACGA126WRE0 | U | Seal packing | 1 | AC |
| | 4-8 | MLEVFA078WRF0 | U | Open lever | 1 | AE |
| Δ | 4-9 | PCOVPA309WRE0 | U | Waveguide cover | 1 | AC |
| | 4-10 | PDUC-A578WRF1 | U | Air intake duct | 1 | AD |
| | 4-11 | PCUSGA360WRP0 | U | H.V cushion | 1 | AA |
| | 4-12 | GDAI-A280WRP0 | U | Base plate | 1 | AQ |
| | 4-13 | PSPAGA001WRE0 | U | Vibration proof cushion | 1 | AA |

## DOOR PARTS

| | REF. NO. | PART NO. | § | DESCRIPTION | QTY | CODE |
|---|---|---|---|---|---|---|
| Δ | 5 | CDORFA003URK0 | U | Door assembly [R-2J28(B)] | 1 | BB |
| Δ | 5 | CDORFA741WRK0 | U | Door assembly [R-2J28(W)] | 1 | BD |
| Δ | 5 | CDORFA005URK0 | U | Door assembly [R-2J28(BK)] | 1 | BB |
| | 5 | CDORFA008URK0 | U | Door assembly [R-2J68(W)] | 1 | BB |
| | 5 | CDORFA008URK0 | U | Door assembly [R-2J58(W)] | 1 | BB |
| | 5 | CDORFA009URK0 | U | Door assembly [R-2J68(B)] | 1 | BB |
| | 5-1 | FDORFA299WRT0 | U | Door panel assembly | 1 | AU |
| | 5-2 | GCOVHA366WRF0 | U | Choke cover | 1 | AG |
| | 5-3 | GWAKPA009URR0 | U | Door frame [R-2J68(B)] | 1 | AP |
| | 5-3 | GWAKPA008URR0 | U | Door frame [R-2J58/68(W)] | 1 | AP |
| | 5-3 | GWAKPA005URR0 | U | Door frame [R-2J28(BK)] | 1 | AP |
| | 5-3 | GWAKPA428WRR0 | U | Door frame [R-2J28(W)] | 1 | AT |
| | 5-3 | GWAKPA003URR0 | U | Door frame [R-2J28(B)] | 1 | AP |
| | 5-4 | PSHEPA560WRE0 | U | Outer door film | 1 | AE |
| | 5-5 | LSTPPA158WRF0 | U | Latch head | 1 | AD |
| | 5-6 | MSPRTA141WRE0 | U | Latch spring | 1 | AA |
| | 5-7 | PSHEPA482WRE0 | U | Sealer film | 1 | AH |
| | 5-8 | XEBSD30P06000 | U | Screw | 4 | AA |

## SCREW, NUT AND WASHER

| REF NO. | PART NO. | § | DESCRIPTION | QTY | CODE |
|---|---|---|---|---|---|
| 7-1 | XOTSD40P12RV0 | J | Screw 4mm x 12mm | 13 | AA |
| 7-2 | XHTSD40P08RV0 | J | Screw 4mm x 8mm | 6 | AA |
| 7-3 | XHPSD40P08K00 | J | Noise unit screw | 1 | AA |
| 7-4 | LX-CZA011WRE0 | U | Thermo cut out rivet | 2 | AB |
| 7-5 | LX-CZA063WRE0 | J | HVT screw | 4 | AA |
| 7-6 | XCPSD30P04000 | J | Thermo cut out screw | 1 | AT |
| 7-7 | XFPSD40P06000 | J | TTM screw | 1 | AA |
| 7-8 | XOTSD40P10000 | J | Air duct screw | 1 | AA |
| 7-9 | XEPSD30P12XS0 | U | Control panel screw | 1 | AA |
| 7-10 | XOTSE40P12000 | J | O/Wrap screw | 2 | AA |
| 7-11 | XOTSF40P12000 | J | O/Wrap screw | 2 | AA |
| 7-12 | LX-CZA030WRE0 | J | TTM cover screw | 1 | AA |

# PARTS LIST

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"§" MARK: SPARE PARTS-DELIVERY SECTION

## MISCELLANEOUS

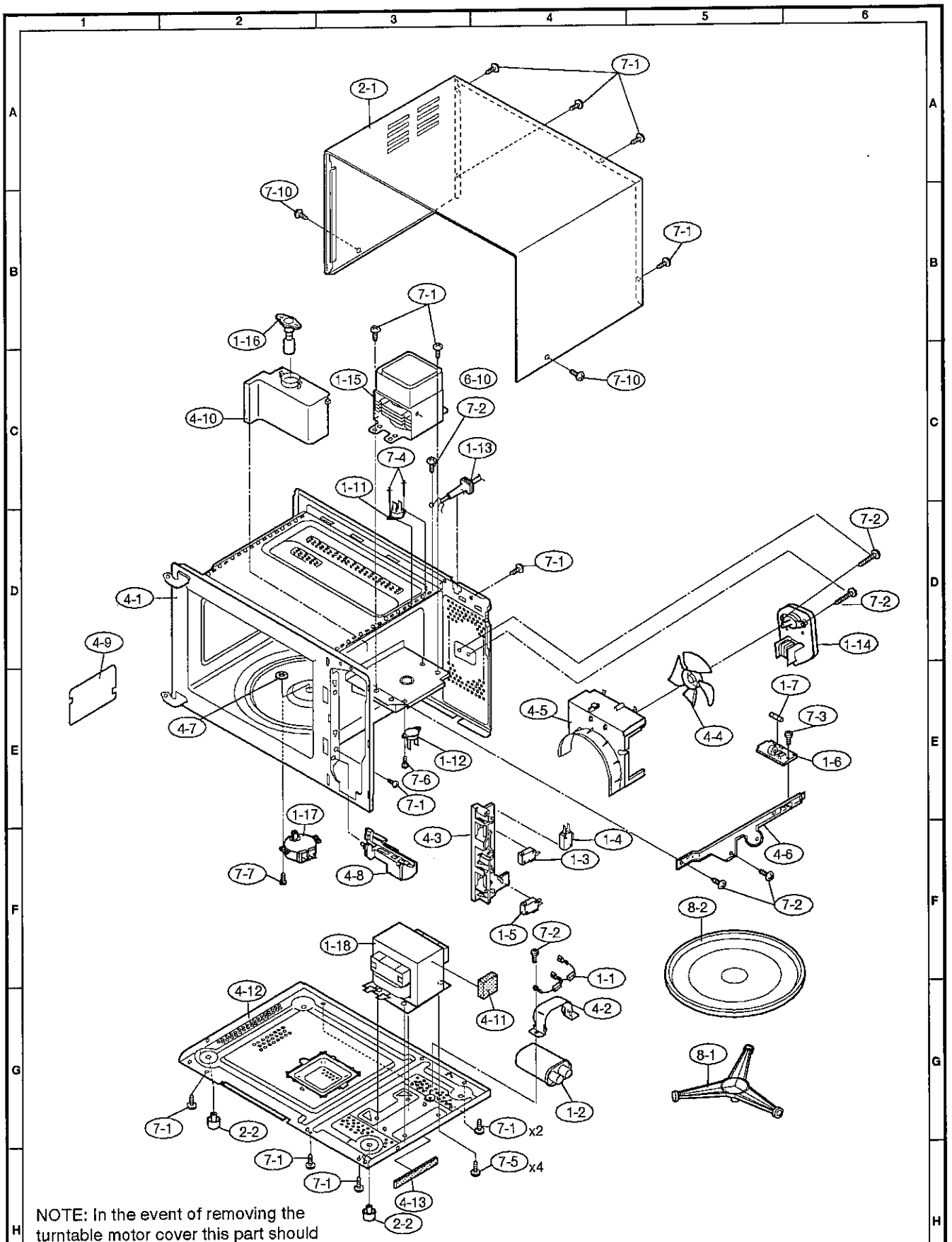
| | REF. NO. | PART NO. | § | DESCRIPTION | QTY | CODE |
|---|---|---|---|---|---|---|
| | 8-1 | FROLPA070WRK0 | U | Roller stay assy | 1 | AN |
| | 8-2 | NTNT-A060WRE0 | U | Turntable | 1 | AN |
| | 8-3 | TINS-A007URR0 | U | Operation / Cook book | 1 | AM |
| * | 8-4 | QW-QZA191WRE0 | U | H.V. wire A | 1 | AF |
| * | 8-5 | QW-QZA001URE0 | U | H.V. wire B | 1 | AE |
| | 8-6 | FW-VZA002URE0 | U | Main wire harness | 1 | AU |

## HOW TO ORDER REPLACEMENT PARTS

To have your order filled promptly and correctly, please furnish the following information.

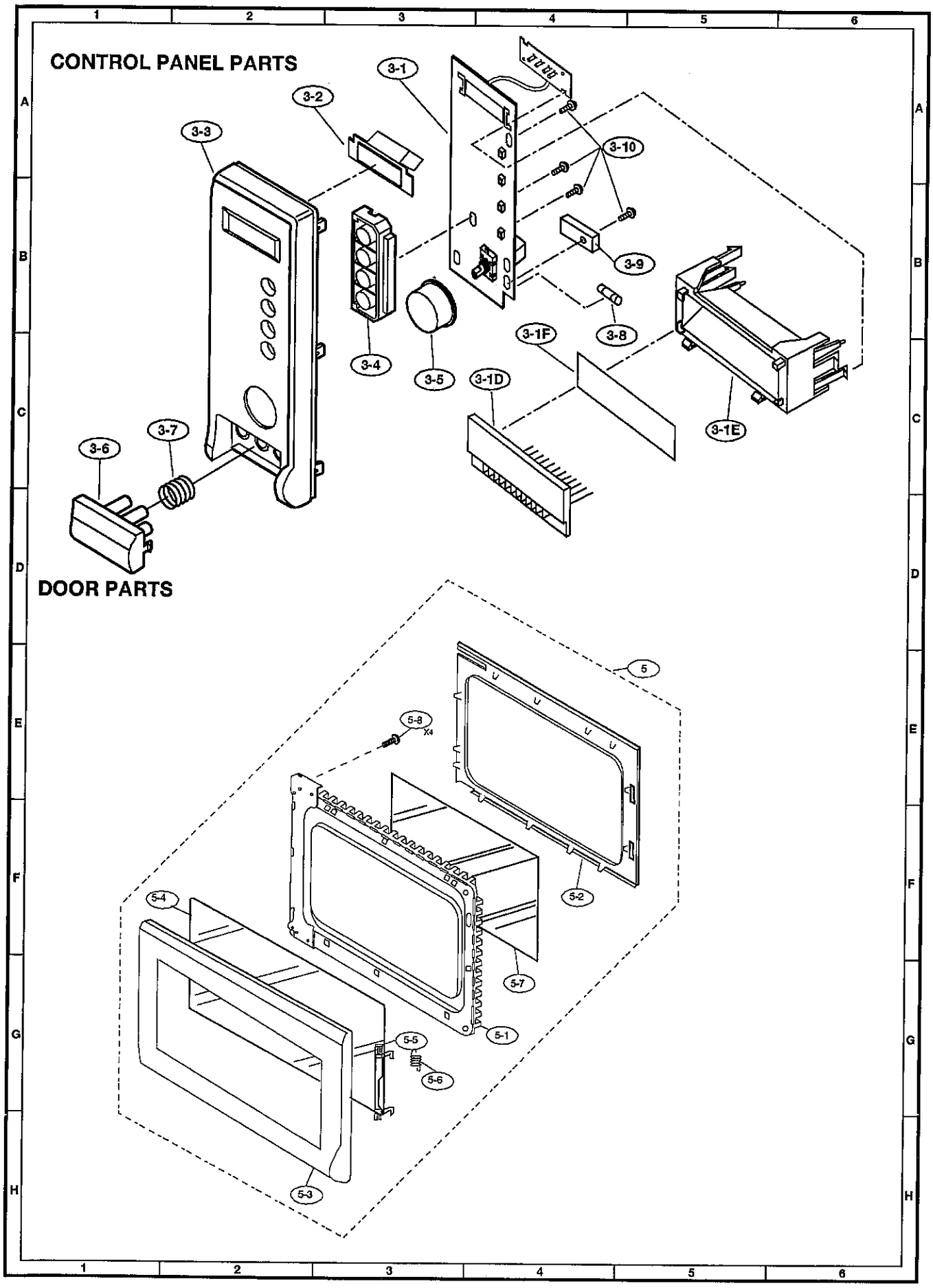
1. MODEL NUMBER
2. REF. NO.
3. PART NO.
4. DESCRIPTION

# CABINET AND UNIT CHASSIS PARTS



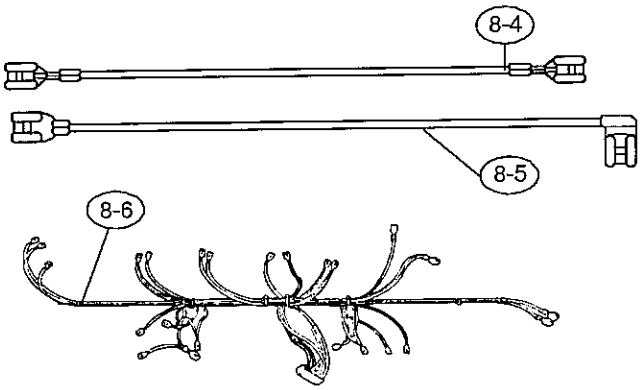

NOTE: In the event of removing the turntable motor cover this part should be refitted using screw connection: LX-CZA030WRE0 (7-12)

# CONTROL PANEL PARTS/DOOR PARTS



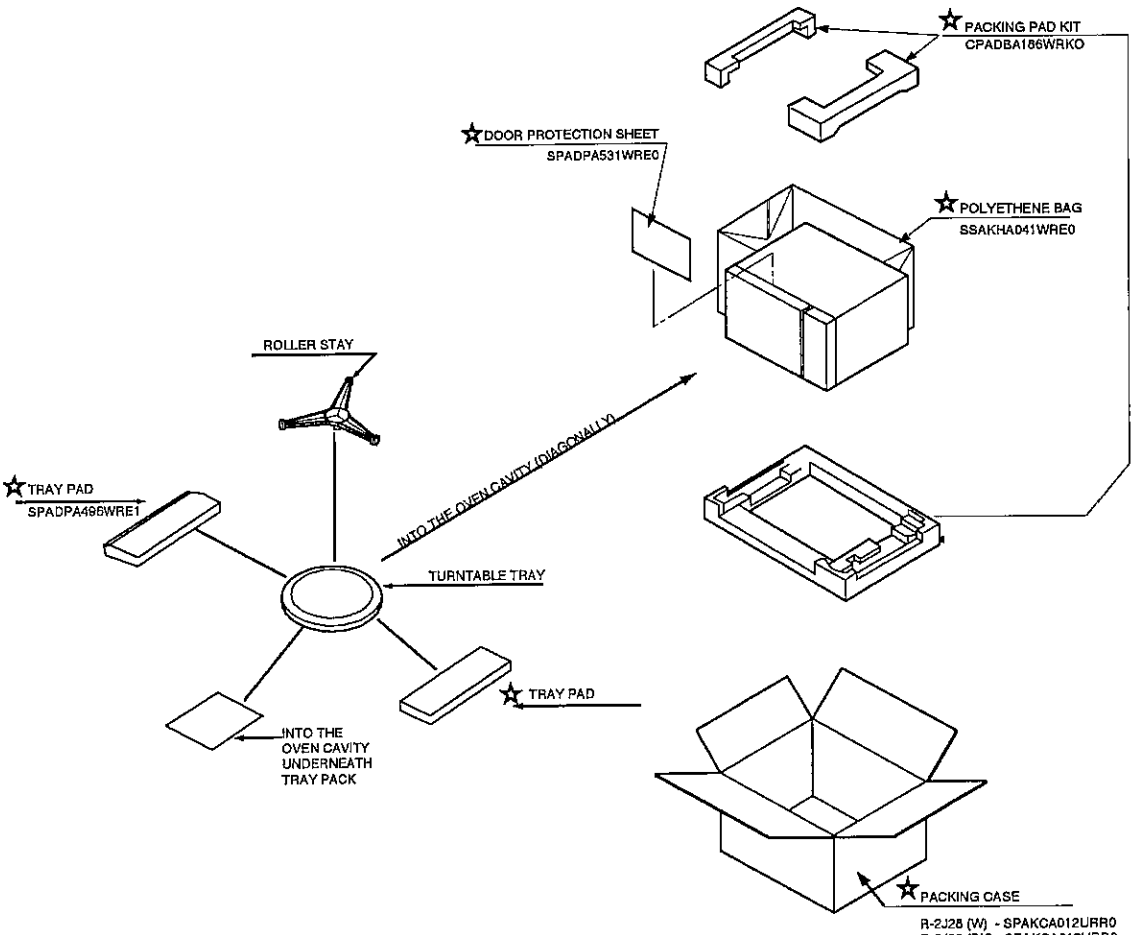
# MISCELLANEOUS/PACKING AND ACCESSORIES

## MISCELLANEOUS




Actual wire harness may be different than illustration.

## PACKING AND ACCESSORIES




☆ Not replaceable items.

R-2J28 (W) - SPAKCA012URR0
R-2J28 (BK) - SPAKCA013URR0
R-2J68 (W) - SPAKCA016URR0
R-2J58 (W) - SPAKCA018URR0
R-2J68 (B) - SPAKCA015URR0
R-2J28 (B) - SPAKCA011URR0

N.B: BEFORE PACKING THE BROWN MICROWAVE OVENS A BROWN PAPER SHEET IS TO BE PLACED ON TOP OF THE OVEN

# NOTES

# NOTES

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